

Review of the ESG ETF Landscape in Canada

- *Environmental, Social and Governance (ESG) themed ETFs have been growing in number and assets, especially recently*
- *Canadian investors who wish to integrate ESG principles in their portfolios can now do so with a growing variety of ETFs.*
- *An ETF's portfolio construction and ESG rating methodology are critical for understanding the differences and similarities between comparable ESG ETFs. Portfolio-level metrics and ETF holdings provide useful insight.*
- *Performance history is limited. Available data shows consistent returns against broad market benchmarks.*

1. ESG ETFs Overview

Environment, Social and Governance (ESG) themed ETFs have been growing in number and assets in recent years, surpassing \$2 billion in AUM in Canada between 50 ETFs, many of which were launched in the last three years. Investors across Canada have been sending strong signals of interest in ESG. However, compared with market cap-weighted passive ETFs, the process of evaluating and selecting ESG ETFs poses an additional challenge: one needs to delve into every detail of the ETF's methodology in order to identify differences and similarities in their approach to ESG issues.

In this report, we provide thoughts on how to navigate the ESG ETF landscape in Canada. We classify each product into a category, summarize the key features of each group, and comb through portfolio-level data and performance figures. We also describe the different kinds of ESG scoring and controversial business exclusions, which serve as foundations to any ESG analysis.

Our main observations of ESG ETFs in Canada include:

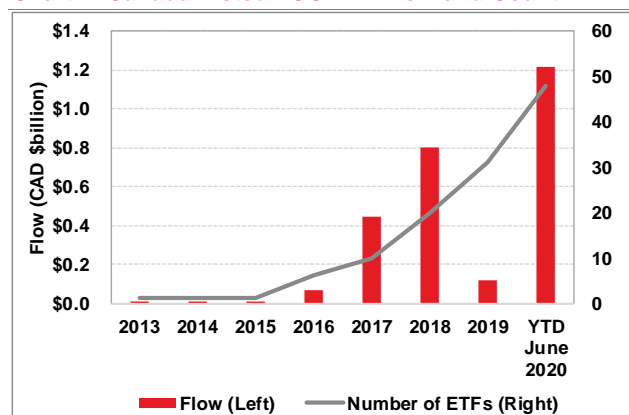
- **Methodology categories:** All ESG ETFs can be compartmentalized into four categories (Table 1): values-based screening, data-driven, actively managed equity, and fixed income.
- **Active Share ranges:** An ESG ETF's portfolio can differ from the broad market benchmark depending on methodology: as measured by active share, ESG ETFs that attempt to minimize deviation are closest to the benchmark, while Actively Managed ETFs differ the most, with deeper levels of concentration.
- **Factor Exposures:** A quality factor tilt is commonly found in ESG ETFs across all regions. At present, this factor exposure does not come at the expense of unreasonable valuation ratios.
- **Performance broadly tracks with benchmark:** Even though historical data is limited, ESG ETFs performed in line with their non-ESG peers during the pandemic drawdown, bucking the oft-cited claim that investors must sacrifice investment returns for ESG exposure.
- **Different ESG philosophies must be understood:** ESG rating agencies share common views on some stocks but differ on others. Even within a single rating agency, differences in ESG portfolios could arise from index methodologies. The decision over what rating agency and index to use could impact portfolio composition.

Table 1: ESG ETF Methodology Classification

	Values-based Screening			ESG Data Driven			Actively Managed	Fixed Income
	Broad	Environmental	Social	Score Threshold	Minimize Deviation	Best of Sector		
Canada	MKC	DRMC DRFC	RLDR	XCSR	XESG	ESGA XEN	NSCE	ESGB DRCU NSCB XSAB XSTB
U.S.	MUS	DRFU DRMU		XUSR	XSUS	ESGY ESG*		ESGF HUIB
Intern'l Developed	MEU MXU WSRD	DRMD DRFD		XDSR	XSEA	ESGE	WOMN	
EM	MEE	DRFE			XSEM			
Global	MWD WSRI	DRFG ETHI		CESG*		ESGG	ZESG** FCSW MWMN NSGE QEF	

*Currency hedged unit available; **asset allocation ETF. ESG ETF listed in alphabetical order. Source: NBF

Chart 1: Canada-Listed ESG ETF Flow and Count



Source: NBF, Bloomberg. Data as of June 2020

2. ESG ETFs Assets and Flows

ESG investing is not new in Canada; in fact, one of the oldest ETFs on the market is **XEN**, iShares Jantzi Social Index ETF, which launched in 2007. However, in recent years, ESG product innovation and asset growth seem to have passed an inflection point; flows have been steadily rising in both Canada and the U.S., accelerating to record levels in 2020 so far. Net ESG inflows in Canada total \$1.2 billion year-to-date, or 77% of this category's starting assets (Chart 1).

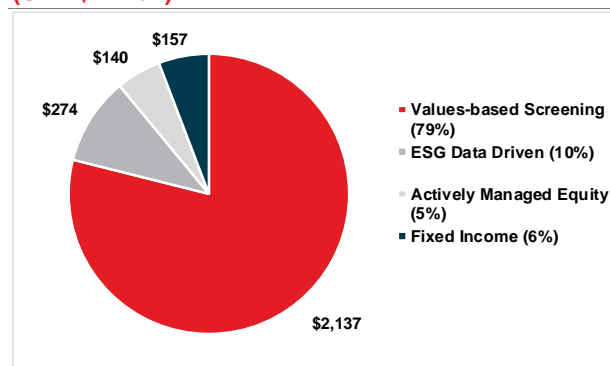
Despite the surge in flows, ESG ETF assets remain comparatively small – the \$2.7 billion in AUM makes up just 1% of the overall Canadian ETFs marketplace, but their share of inflows contributes to 5% of all creations in Canada this year, a five-fold over-representation (Chart 2).

In the U.S., ESG ETFs attracted \$14.1 billion (Chart 3), or 84% of their starting assets in the same period. Like in Canada, the U.S. ESG ETF space currently occupies a small slice of the asset pie; the \$33.6 billion AUM in ESG ETFs represents just 0.7% of the overall U.S. ETF market, but their inflow makes for 7% of the total ETF inflows in the U.S. this year. In sum, ESG inflow figures are higher than any sector or other theme's year-to-date flows in both countries. The *number* of ESG products has also ballooned, to nearly 50 pure-play ESG ETFs in Canada and at least 90 in the U.S.

The strong ESG inflow was not interrupted by the selloff activity related to the COVID-19 pandemic, demonstrating that ESG investing is more than just a fad.

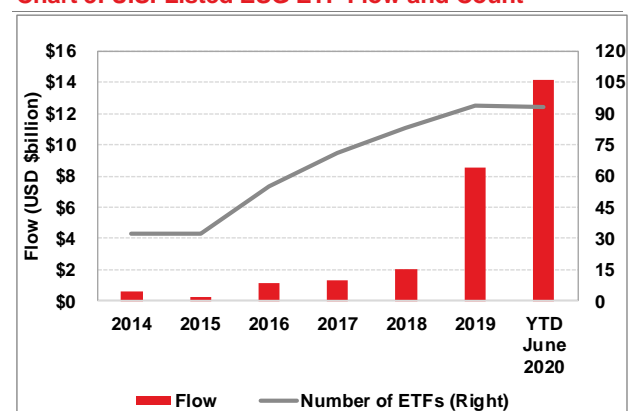
From the pattern of the flows, the largest driver of new ESG ETF creations has been “one-off” creation activity on the part of large institutional subscriptions. Most recently, we have also observed higher retail investor enthusiasm toward ESG ETFs in the flows, in the form of small steady creations in a few specific ETFs.

Chart 2: Canada-Listed ESG ETF AUM by Category (CAD \$Million)



Source: NBF, Bloomberg. Data as of June 2020

Chart 3: U.S.-Listed ESG ETF Flow and Count



Source: NBF, Bloomberg. Data as of June 2020

3. ESG ETF Classification & Review Scope

Close to 50 ESG ETFs exist in the Canadian market, some with complex, multi-step index methodologies, while others are actively managed. Some groups of ESG products are extremely alike except for small but critical differentiators. This poses a challenge for any investor who lives by the maxim “know what you are buying”. To map the landscape, we classify ESG ETFs into different categories, summarize their index and investment methodologies, and show their key differences in exclusion criteria, index construction rules and investment strategies.

The phrase “ESG” covers many Canadian ETFs that allow for social, environmental and governance issues as key investment considerations. Under the broad umbrella of ESG, investors might encounter a multiplicity of overlapping terms: any of the individual “letters” comprising ESG can be a stand-alone mandate (i.e., Environmental, Social, Governance); SRI (Socially Responsible Investing); and Impact Investing. Uniformity around these definitions does not exist, but despite the ambiguities, we present a set of definitions that aligns with most of the current literature:

- **ESG:** An index or a portfolio manager may refer to Environmental, Social and Governance data of a company when constructing an index or a fund. The analytical aspect of the security selection process is the most distinguishable feature of ESG.

- **SRI:** An index or a portfolio manager is looking for alignment of certain values so that the positively aligned companies are included or the negatively aligned companies are excluded. Those values could be environmental, such as fossil fuel reduction; or they could be social, such as seeking out companies with women in leadership positions.
- **Impact Investing:** Impact is about intention. An index or a portfolio manager aims to buy companies where there is intent to drive positive social or environmental changes.

The three terms above appear often in industry parlance, but the boundaries between them can be unclear in some contexts. For the purpose of clarity, we sought out all Canada-listed **ESG ETF** with one or more of the above features as a major part of their stated mandate, then we classified them into one of four categories based on their investment methodologies (Table 2):

- 1) Value-based Screening (Equity),
- 2) ESG Data-Driven (Equity)
- 3) Actively Managed (Equity)
- 4) Fixed Income ESG ETFs.

As ESG begins to permeate all forms of investment management, it's important to recognize that Table 2 may be missing ETFs that still incorporate ESG as part of their strategy. Some products not included in this report might consider ESG as a component of higher-level risk management, or the managers might screen their universe of stocks or bonds with ESG criteria on a firm level, rather than championing ESG as the *raison d'être* of the product. For example, Purpose ETFs announced that they will embed ESG core factors in all investment processes including their entire fund line-up in October 2019. For a similar example from the world outside ETFs, Blackrock is addressing climate change in its actively managed investment funds by divesting from thermal coal producers. Firms such as Vanguard, BMO, RBC and Fidelity (to mention a few) either do ESG screening in their active funds, or they have other resources dedicated to ESG causes via risk management, impact investing and shareholder activism.

Table 2: ESG ETF Classification

	Values-based Screening			ESG Data Driven			Actively Managed	Fixed Income
	Broad	Environmental	Social	Score Threshold	Minimize Deviation	Best of Sector		
Canada	MKC	DRMC DRFC	RLDR	XCSR	XESG	ESGA XEN	NSCE	ESGB DRCU NSCB XSAB XSTB
U.S.	MUS	DRFU DRMU		XUSR	XSUS	ESGY ESG*		ESGF HUIB
Intern'l Developed	MEU MXU WSRD	DRMD DRFD		XDSR	XSEA	ESGE	WOMN	
EM	MEE	DRFE			XSEM			
Global	MWD WSRI	DRFG ETHI		CESG*		ESGG	ZESG** FCSW MWMN NSGE QEF	

*Currency hedged unit available; **asset allocation ETF. ETFs listed in alphabetical order. Source: NBF

3.1. Equity ESG ETF Methodology classifications

- **Values-based Screening:** These ETFs screen companies based on certain environmental or social values. A “screen” can be positive if it's part of a bottom-up portfolio construction process, in which the index or manager seeks out companies with specific ESG characteristics such as green energy production. Alternatively, a screen can be negative if the portfolio starts from a broad universe or benchmark, and then the methodology removes ESG offenders such as labour rights violators or greenhouse gas emitters. These ETFs can be further subdivided depending on the scope of the screening:
 1. **Environmental:** Environmental value-screened ETFs exclude companies that either have fossil fuel reserves, exposure to the fossil fuel industry, high carbon emission, or other forms of pollution. If they have inclusionary screens, they look for companies with industry-leading carbon efficiency.
 2. **Social:** Social value-screened ETFs exclude companies with severe labour rights controversies; or include companies that promote minority representation among other positively valued social practices.
 3. **Broad:** ETFs that follow a broad range of environmental or social values, combining environmental, social and governance-based screens.
- **ESG Data-driven methodology:** Unlike Values-based Screening, some ETFs rely on a constellation of ESG data points (e.g., revenues from fossil fuels) that an index provider or ratings agency uses to create a composite numerical ESG “score” for each company. This is a “big-data” intensive process, and index providers such as MSCI, Sustainalytics and S&P harness both human-power and computer-power to analyze companies’ environmental, social and governance metrics to arrive at this score for every stock in their coverage universe. We summarize the strategies of **ESG data-driven** ETFs into three sub-categories:
 1. **Score Threshold:** designed to exclude certain companies with low ESG rating and scoring.

2. **Minimize Deviation:** designed to maximize a whole portfolio's aggregate ESG score while maintaining similar risk & return characteristics to a parent benchmark index. The benchmark is often a familiar market-cap-weighted, broad-based, purely passive index. Optimization constraints could include: predicted tracking error, active sector/country weight, or turnover.
 3. **Best of Sector:** designed to select the highest scored ESG companies within each sector. Best of sector ETFs rank securities within sectors based on their ESG scores (possibly along with other factors), and they target sector weights that are relatively close to the parent index.
- **Actively managed:** instead of tracking an index, several Equity ETFs in Canada have human portfolio managers actively selecting stocks and constructing ESG portfolios.

3.2. Fixed Income ESG ETFs

ESG investing is not unique to the world of Equity; seven Fixed Income ETFs fall under this category as well. Four of them track indices while the remaining three are actively managed. Some investors might confuse ESG fixed income products with “green bonds,” but the two concepts are not the same. Companies issue green bonds specifically to fund projects with positive environmental or climate benefits. Most ESG bond ETFs do allocate *partially* to green bonds, but they also hold standard corporate bonds, albeit according to a similar philosophy around investment (or divestment) in the issuing company's equity.

The above methodology classifications and their sub-categories allow us to plumb the depths of available strategies in the Canadian ETF marketplace for ESG conscious investors. In principle, there is nothing about this scheme that completely solves the problem of overlapping or ambiguous categorization. However, we apply a rule of thumb to deal with “colliding” categories, and that is to consider the *dominant* strategy of a fund. For example, a product with *strict* (i.e., zero-weight) negative screens on environmental or social issues might fall under Values-based Screening, if this is where the product's methodology stops. However, if the screening is the first part of a multi-stage process to derive a universe of securities so that the index could conduct further ESG data analysis to construct a final portfolio, then we define this ETF as either Score Threshold, Minimize Deviation or Best of Sector depending on its characteristics.

4. ESG ETF Characteristics

Many ETF providers offer a whole suite of ESG ETFs with different geographic focuses but otherwise similar index methodology. Table 3 below shows the full list of Canadian Equity ESG ETFs. For complete tables of ESG ETFs for all regions (including index tracking, actively managed and fixed income ETFs), please refer to Appendix 2 on page 18 and 19.

Table 3 - Equity ESG ETFs - Canada Region											Grouped by Classification, Sorted by AUM					
Fund Name	Ticker	Classification	Active Share		ETF Metrics						Ann. Returns (%)**			Holdings		
			Active Share (%)	Cost of Active Share	MER (%)	AUM \$M	Maxdraw down (%)	ROE	D/E	P/E	1 Year	3 Year	5 Year	Aggr # Holdings	Media Mcap \$B	
S&P/TSX Composite Index							33.4	6.0	1.5	21	-2.2	3.9	4.4	230	30	
1 iShares ESG Aware MSCI Canada Index ETF	XESG	Minimize Deviation	31	0.35	0.17	24	33.7	6.5	1.6	24	-4.1	2.4	3.8	122	34	
2 iShares Jantzi Social Index ETF	XEN	Best of Sector	61	0.80	0.55	183	33.7	8.7	1.6	20	-10.7	1.0	3.0	49	43	
3 BMO MSCI Canada ESG Leaders Index ETF	ESGA	Best of Sector	55	0.20	0.17	11	31.7	8.5	1.4	19	-3.1	3.2	5.5	43	46	
4 Mackenzie Maximum Diversification Canada	MKC	Broad	52	0.85	0.50	343	32.8	7.7	0.9	20	0.6	4.9	4.5	97	16	
5 Desjardins RI Canada Multifactor - Low CO2 ETF	DRFC	Environmental	68	0.75	0.57	204	35.2	6.3	1.2	20	-13.6	-2.6	0.0	45	18	
6 Desjardins RI Canada - Low CO2 Index ETF	DRMC	Environmental	40	0.57	0.29	11	31.9	9.7	2.0	17	-2.6	3.1	2.5	61	80	
7 RBC Vision Women's Leadership MSCI Canada	RLDR	Social	28	0.81	0.29	141	33.6	8.2	1.5	19	-5.6	2.8	-	124	47	
8 iShares ESG Advanced MSCI Canada Index ETF	XCSR	Score Threshold	47	0.23	0.17	2	29.7	8.8	1.9	17	5.2	7.7	9.2	131	45	
9 NBI Sustainable Canadian Equity ETF	NSCE	Actively Managed	69	0.50	0.68	2	-	14.6	1.8	18	-	-	-	30	26	

*NAV based return data as of 2020-06-30. Backtested return data in lighter shade. Source: National Bank of Canada, Bloomberg.

4.1. Active Share

This metric gives an idea of how different an ETF is from its benchmark. A portfolio that has identical securities and weights as its cap-weighted passive benchmark would have an “active share” of 0%, and one that is entirely different would have an active share of 100%. Funds with a higher active share may deviate more sharply from their passive benchmarks, in either a positive or negative direction.

ESG ETFs in Canada display active share metrics in the range of 25% to 70%, with a few outliers resulting from their management styles or strategies (Chart 4). An analysis of the active shares reveals the following:

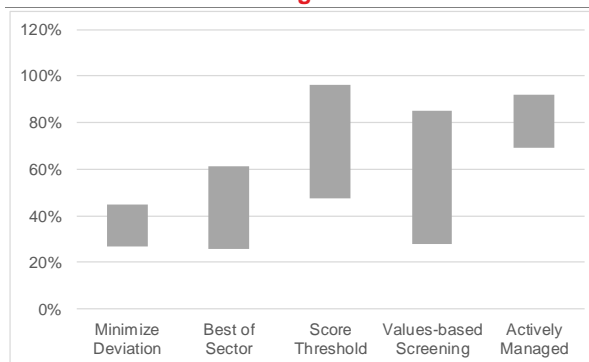
- Actively managed ESG ETFs tend to have much higher active shares than those that are index-tracking. The range of active share for the active strategies is 70% to 90%. For example, NBI Sustainable Global Equity ETF (NSGE) has active share of 90% relative to the MSCI All Country World Index. Meaningful deviation in portfolio composition indicates that the human portfolio managers take differentiated and sometimes more concentrated bets in their security selection.
- Among index-tracking ESG ETFs, those that track indices designed to minimize tracking error relative to the broad markets, such as iShares ESG Aware suite of ETFs (XESG in Table 3), have active share on the lower end of the spectrum. ETFs with a “best of sector” strategy, such as BMO’s ESG Leader suite of ETFs (ESGA in Table 3) show higher active share than the previous cohort. Lastly, the results vary for Values-based screening ETFs because they have specific social or environmental value company screens that could differ widely across products.

4.2. Return & Risk

Most ESG ETFs in Canada (85%) launched within the last three years. Index backtest returns (light shade colour in Table 3 on Page 4) are displayed whenever live ETF returns are unavailable. “Past performance is no guarantee of future results” has always been an important principle, but never more so than in the growing world of ESG investing, because we may be standing on the cusp of a major transition towards sustainable business models. The future flow of capital towards ESG might change asset pricing in the long run, and investors who are at the forefront of the curve might be able to harvest this new premium. However, the flipside of this argument is also a possible outcome, if trends and appetites reverse away from apparently growing demand for ESG!

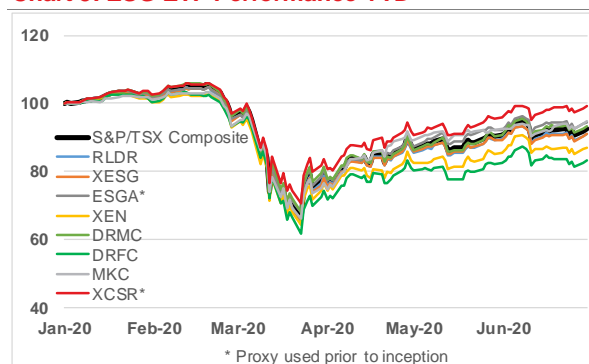
With those grains of salt in place, we can examine the limited historical data for lessons on how ESG investments might perform. We find no conclusive evidence that ESG ETFs consistently outperform or underperform their respective benchmarks. Instead, their returns depend highly on the window of observation. ESG strategies can add value in some time periods and detract during others.

Chart 4: Active Share Range of ESG ETFs*



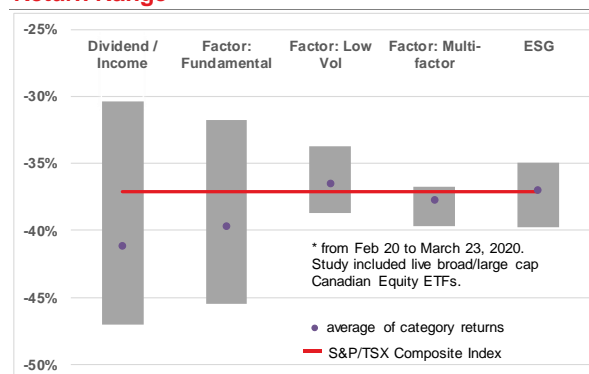
Source: NBF, Bloomberg; Data as of April 2020

Chart 5: ESG ETF Performance YTD



Source: NBF, Bloomberg; Data as of June 2020

Chart 6: Coronavirus selloff Peak to Trough* ETF Return Range



Source: NBF, Bloomberg; Data as of March 2020

For a recent example, we looked closely at how ESG ETFs performed during the 2020 pandemic-induced market selloff and year-to-date (Chart 5). ESG ETFs provided efficient exposure to their respective regions or asset class categories. The median max-drawdown during the selloff was on par with the broad market because many ESG ETFs generally track close to the passive benchmark (Chart 6). Meanwhile, Dividend & Income ETFs displayed the widest range of outcomes because these ETFs tend to concentrate in sectors such as financials, utilities and energy, all of which suffered heavily during March.

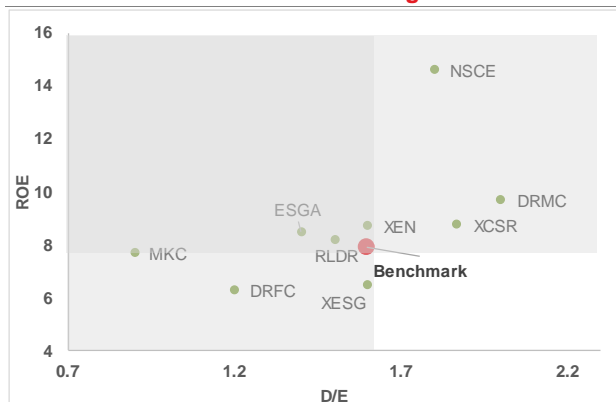
To conclude, even though the performance histories of ESG ETFs are limited overall, they ran the gauntlet of the March 2020 selloff and showed some resilience thanks to diversification, good sector balance, and quality factor exposure which we'll cover in the next section.

The analysis of live and back-tested ESG performance history delivers this key message: investors shouldn't view ESG ETFs as a short-term opportunity or trade idea. Instead, ESG investors must continually assess the risk/reward of biasing their portfolio away from specific companies and sectors, with a long-term perspective on how this might impact portfolio growth in keeping with their investment values.

4.3. Fundamental Data

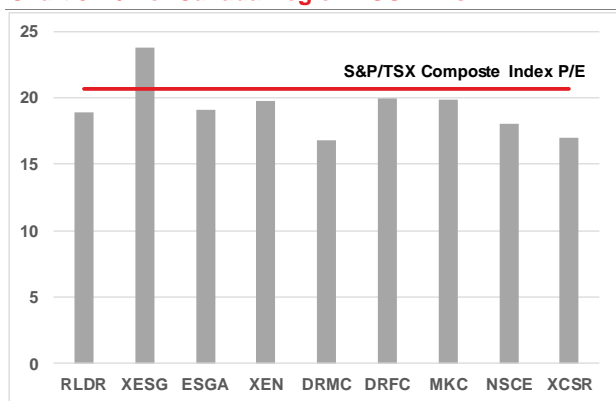
- **Quality Factor:** The “quality” factor is an academic source of return premium coming from companies with metrics like high ROE, low Debt to Equity and stable earnings. Although ESG ETFs have no explicit mandate to filter for high quality, we observe a consistent quality tilt among ESG ETFs across all regions. For example, six out of nine ESG ETFs with Canada exposure (RLDR, ESGA, XEN, DRMC, XCSR, NSCE) have higher ROE than the benchmark S&P/TSX Composite Index; and six ETFs (RLDR, XESG, ESGA, XEN, DRFC, MKC) have equal or lower than benchmark's debt/equity ratio, while none sit in the “low quality” quadrant characterized by high debt-to-equity and low ROE. (Chart 7).
- These statistics show that ESG ETF portfolios are generally comprised of companies with higher profitability or lower levels of debt than the broader market. The “direction of causality” is not clear at this point, but the intuitive explanations can work either way: it's possible that companies with stronger balance sheets may be better positioned to focus on mitigating environmental, social and governance issues while introducing sustainable practices and enhancing their ESG-related disclosures. On the other hand, it's also possible that companies with unstable earnings or low profitability, as a group, might de-prioritize ESG initiatives over more immediate operational concerns.
- **Valuations:** High-quality factor exposure does not translate to high valuations in the case of ESG ETFs. We evaluate the portfolio-level price to trailing 12-month earnings ratio for all ESG ETFs in Canada. Most ESG ETF valuation ratios are in line with their broad market benchmarks. For example, among the nine Canadian equity ESG ETFs, eight have lower P/E than the benchmark cap-weighted index (Chart 8).

Chart 7: ROE and D/E of Canada Region ESG ETFs



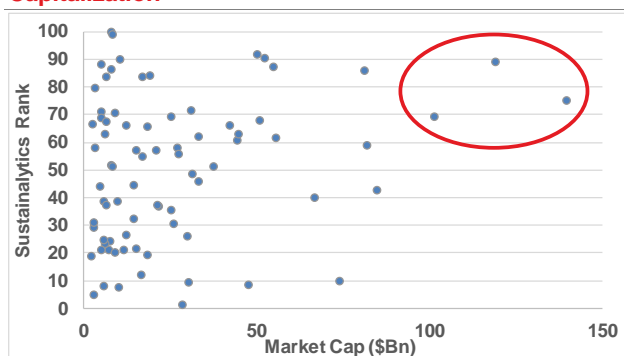
Source: NBF, Bloomberg; Data as of April 2020

Chart 8: P/E of Canada Region ESG ETFs



Source: NBF, Bloomberg; Data as of April 2020

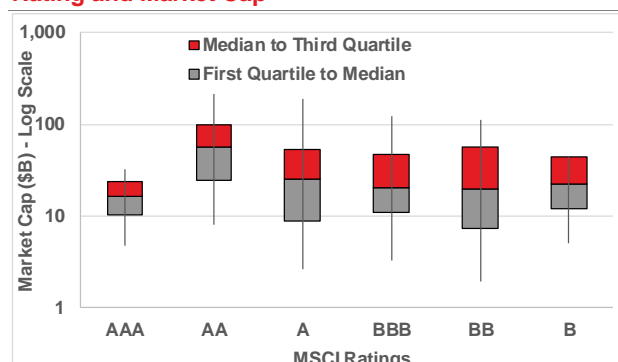
Chart 9: Canadian Companies' ESG Score and Market Capitalization



Source: NBF, Bloomberg, Data as of February 2020

- **Underlying Stocks Market Cap:** Some argue that larger companies can “afford” better ESG scores because they are able to dedicate more resources to ESG-related disclosure or management. Although we didn’t observe a linear relationship between ESG score and market cap in the MSCI Canada Standard Index (scatter plot Chart 9), the “mega-cap” companies (i.e., in our context companies over \$100 bln in market cap, namely RY, TD and ENB) do have better than average ESG ratings by both MSCI and Sustainalytics. The box plot (Chart 10) provides a different perspective, showing the distribution of market cap for each ESG rating bucket. We can see that the highest-rated companies (AAA rated) are smaller companies in the Canadian universe, namely CAE, GIL and FCR-U. This is an encouraging observation that a company doesn’t need to be the largest in order to be awarded a high score by ESG rating agencies.

Chart 10: Box Plot – Another Perspective on ESG Rating and Market Cap



Source: NBF, Bloomberg, MSCI, Data as of February 2020

- **Sector Attribution:** Canadian equity ESG ETFs tend to overweight Financials, Technology and Consumer Staples sectors while underweighting Energy and Utilities. Most Canadian equity ESG are broad-based or environment-themed with negative screens on fossil fuels, nuclear energy or environment-related controversies.
 - Two of the nine Canadian equity ESG ETFs (**NSCE**, **XCSR**) currently have zero exposure to energy because they strictly exclude fossil fuel companies. These two ETFs consequently show the largest technology sector overweight. In the International ESG ETF space, index-tracking ETFs XDSR, CESG, ETHI, DRFG and actively managed NSGE also allocate zero weight to the energy sector.
 - ETFs that use a best-of-sector methodology such **XEN** and **ESGA** have lower sector biases by design.
 - ESG ETFs that are designed to minimize tracking error such as **XESG** also exhibit low sector deviation from the benchmark, because this is often one of the design constraints during the optimization process.
 - Value-screened ETFs exhibit a wide range of sector deviation metrics. Social-themed **RLDR** has the lowest sector deviation among the nine Canadian equity ETFs. **DRMC** has rather dramatic overweights and underweights because it tries to reduce carbon intensity across all industry exposures, not just energy.

Table 4: Sector Tilts of Canada Exposure ESG ETFs: Percent Over/Under Weight Versus S&P/TSX Composite

Ticker	ETF Name	Energy	Fin.	Ind.	Matl.	Info Tech	Comm. Serv	Utility	Cons Discr	Cons Staple	Real Estate	Health Care
NSCE	NBI Sustainable Canadian Equity	-13	-2	11	-8	9	3	-5	2	9	-3	-1
XCSR	iShares ESG Advanced MSCI Canada Index	-13	13	4	0	5	-2	-3	-1	0	-1	-1
MKC	Mackenzie Max Diversification Canada Index	-7	-13	-3	15	1	1	0	3	5	-2	-1
DRMC	Desjardins RI Canada - Low CO2 Index	-3	14	-2	-7	3	-1	-2	1	0	-2	0
XEN	iShares Jantzi Social Index	-3	1	5	-3	-5	9	-4	3	0	-3	-1
XESG	iShares ESG Aware MSCI Canada Index	-1	3	1	0	0	-1	1	-1	-1	-2	0
DRFC	Desjardins RI Canada Multifactor - Low CO2	0	-6	3	-4	-1	-1	-1	-1	2	8	1
ESGA	BMO MSCI Canada ESG Leaders Index	1	1	-1	-2	6	-3	-1	0	3	-3	0
RLDR	RBC Vision Women's Leadership MSCI Can	2	2	-1	0	1	-3	-1	0	0	-1	0
S&P/TSX Composite		13	29	12	14	8	6	5	4	4	3	1
Relative Weight		Under										Over

Source: NBF, Bloomberg. Data as of April 2020

- **Geographic Attribution:** compared to the MSCI All Country World Index (MSCI ACWI), global ESG ETFs have more exposure to Europe and the U.S. than to the Asia-Pacific region. For example, NSGE has 18% overweight in Europe, and ETHI has 18% overweight in the U.S. Several reasons can explain these geographic tilts: for instance, the European capital markets are already somewhat “ESG aware” in that some principles around equitable hiring and carbon impact are baked into local regulations, while in the U.S., companies may be relatively better at self-reporting ESG metrics than those headquartered in the Asian Pacific region.

Table 5: Geographic Tilts: of Global Exposure ESG ETFs: Percent Over/Under Weight Versus MSCI ACWI Index

Ticker	ETF Name	Europe	U.S.	Canada	Asia Pacific	Other	Relative Weight
NSGE	NBI Sustainable Global Equity ETF	18	-13	0	-5	-1	Over
MWMN	Mackenzie Global Leadership Impact	6	6	3	-14	-2	
MWD	Mackenzie Max Diversification Developed	5	-7	6	-2	-1	
CESG	CI First Asset MSCI World ESG Impact	4	-4	-2	5	-2	
QEF	AGFIQ Global ESG Factors ETF	1	0	1	-2	0	
DRFG	Desjardins RI Global Multifactor - Fossil Free	1	-2	5	-3	0	
ESGG	BMO MSCI Global ESG Leaders	0	8	0	-7	-2	
FCSW	Fidelity Sustainable World ETF	-1	-1	0	3	0	
ETHI	Horizons Global Sustainability Leaders	-3	18	-2	-12	-2	Under
<i>MSCI ACWI Index</i>		20	55	3	18	4	

Source: NBF, Bloomberg. Data as of April 2020.

4.4. Most Included and Excluded Companies

Table 6 shows the most frequently excluded (or less commonly owned) stocks among the Canadian Equity ESG ETFs. We start from MSCI Canada Standard Index universe and count the number of Canada-focused ESG ETFs that include each constituent stock. All nine Canadian equity ESG ETFs exclude ABX and SRU-U. ABX is excluded perhaps due to its involvement in environment-related controversies: for example, MSCI gave ABX a low controversy score. However, the management of Barrick is disputing MSCI's decision, claiming these allegations of harms are unfounded. SRU-U is rated BB by MSCI perhaps due to comparatively low human capital development. When investing in ESG ETFs, one should be aware of the opportunity cost of not owning these companies.

Table 7 shows which stocks are most commonly owned by the nine Canadian Equity ESG ETFs. CGI Inc., Loblaw's, BMO and TD are owned by all nine. Both MSCI and Sustainalytics rate these companies relatively highly. We also find evidence of sector bias when comparing the list of common exclusions and inclusions: energy, utility, materials, and real estate stocks are more likely to be excluded. On the other end of the spectrum, communication services, information technology, financials, and consumer staples account for many of the commonly owned companies by ESG ETFs.

5. ESG Scores by Different Agencies

Sustainalytics, MSCI and RobecoSAM are all well-known ESG data providers. Most of the ESG ETFs from iShares, BMO and CI First Asset track MSCI indices; Invesco ESG ETFs use SAM's ESG scores; and the iShares Jantzi Social Index ETF XEN uses Sustainalytics' ESG scores.

Table 6: Stocks that are Excluded by at Least Seven Canadian Equity ESG ETFs

Ticker	Name	Sector	Num of Inclusions
ABX	Barrick Gold Corp	Materials	0
SRU-U	SmartCentres REIT	Real Estate	0
TRP	TC Energy Corp	Energy	1
BAM/A	Brookfield Asset Management	Financials	2
CNQ	Canadian Natural Resources	Energy	2
EMA	Emera Inc	Utilities	2
FFH	Fairfax Financial Holdings Ltd	Financials	2
FM	First Quantum Minerals Ltd	Materials	2
PKI	Parkland Corp/Canada	Energy	2
CU	Canadian Utilities Ltd	Utilities	2
ACO/X	Atco Ltd/Canada	Utilities	2
CRON	Cronos Group Inc	Health Care	2
PAAS	Pan American Silver Corp	Materials	2

Source: NBF, Bloomberg. Data as of June 2020.

Table 7: Stocks that are included by at Least Eight Canadian Equity ESG ETFs

Ticker	Name	Sector	Num of Inclusions
GIB/A	CGI Inc	Technology	9
L	Loblaw Cos Ltd	Consumer Staples	9
BMO	Bank of Montreal	Financials	9
TD	Toronto-Dominion Bank	Financials	9
AEM	Agnico Eagle Mines Ltd	Materials	8
OTEX	Open Text Corp	Technology	8
MRU	Metro Inc/CN	Consumer Staples	8
T	TELUS Corp	Communication	8
IFC	Intact Financial Corp	Financials	8
EMP/A	Empire Co Ltd	Consumer Staples	8
MG	Magna International Inc	Consumer Discretionary	8
SLF	Sun Life Financial Inc	Financials	8
RCIB	Rogers Communications Inc	Communication	8
WSP	WSP Global Inc	Industrials	8

Source: NBF, Bloomberg. Data as of June 2020.

5.1. Due to methodology differences, the ESG score for any specific company can vary greatly by agency.

Table 8 shows that the ESG ratings from two different agencies (MSCI and Sustainalytics) “agree” only rarely. Each cell represents the number of companies at each rating combination. Sustainalytics’ numerical rankings can be mapped to MSCI’s “letter grades” with equally-spaced buckets, and if these two agencies were in full agreement, we would expect all companies to lie on the diagonal line from the top left to bottom right of the heatmap, with no companies elsewhere. In reality, we observe quite a few companies outside of the diagonal line. However, in a positive note for independent ESG analysis, there are some (but not many) companies with dramatically different ratings, with zero at the “extreme disagreement” corners.

Table 8: ESG Scores Distribution in Canada

	Sustainalytics*						
	CCC	B	BB	BBB	A	AA	AAA
CCC	0	0	0	0	0	0	0
B	2	3	0	2	0	0	0
BB	1	2	3	1	4	1	1
MSCI BBB	1	4	4	2	4	1	1
A	3	3	4	2	5	3	4
AA	1	1	1	2	5	2	3
AAA	0	0	0	0	2	1	0

*the 1-100 Sustainalytics ranking is mapped to a corresponding MSCI letter score. Only companies in MSCI Canada Standard rated by both agencies are included. Source: MSCI, Bloomberg, Data as of Feb 2020

5.2. Discrepancy in ESG rating between agencies leads to different portfolio composition.

iShares Jantzi Social Index ETF (XEN) uses Sustainalytics ESG scores. BMO MSCI Canada ESG Leaders Index ETF (ESGA) follows MSCI. Table 9 shows four noticeable discrepancies between the holdings of XEN and ESGA, even though all four companies fall into the eligible universe of both ETFs:

1. Bell and Thomson Reuters are in XEN as per their Sustainalytics ratings, but they are excluded from ESGA because of the low MSCI ESG scores (“BB”). Bell’s MSCI ESG score lags peers due to low ratings on privacy & data security and labor management, while Thomson Reuters’s low score stems from MSCI ESG ratings downgrades related to “human capital development”.
2. Enbridge and Bank of Nova Scotia are in ESGA but not in XEN, perhaps due to relative low scores by Sustainalytics. Even though Enbridge’s Sustainalytics score of 69 looks higher than BCE’s score of 62, two scores are only directly comparable within the same industry. Like MSCI, Sustainalytics ranks companies “relative” to their peers in the same industry. In addition, both ETFs seek to achieve sector-neutral exposure, so stocks are selected based on their ranking within their respective sector.

Table 9: Divergent Holdings of XEN and ESGA

Ticker	Sustainalytics Ranking	Weight in XEN (%)	MSCI Rating	Weight in ESGA (%)
BCE	62	6.7	BB	0.0
TRI	92	2.1	BB	0.0
ENB	69	0.0	A	10.0
BNS	59	0.0	AA	8.3

Source: NBF, Bloomberg, Data as of Feb 2020

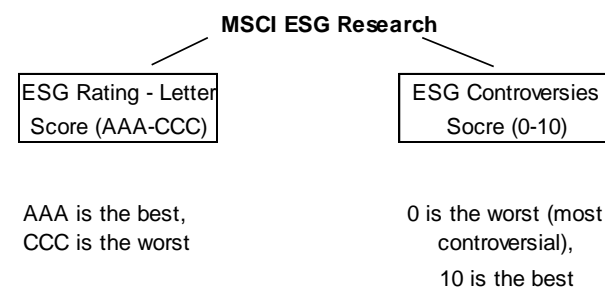
5.3. ESG Scoring Methodology Explained

To understand why different agencies can rate the same company differently, we need to analyze each rating agency’s ESG scoring methodology.

In this section, we mainly focus on MSCI’s rating methodology because it dominates the Canadian ESG ETF marketplace at present. As for the other well-known rating agencies, only one ETF (XEN) uses Sustainalytics ratings and one ETF (ESG) uses RobecoSAM’s ratings.

MSCI reports two scores for each company: a *letter* score and a *controversy* score (Chart 11).

Chart 11: MSCI ESG Rating and Controversy Score



Source: NBF, MSCI

- **ESG Rating:** The letter score is a seven-point scale from ‘AAA’ to ‘CCC’, with ‘CCC’ being the lowest rating. This score is a long-term evaluation of a company’s ESG risks and opportunities across many independent dimensions. MSCI assesses

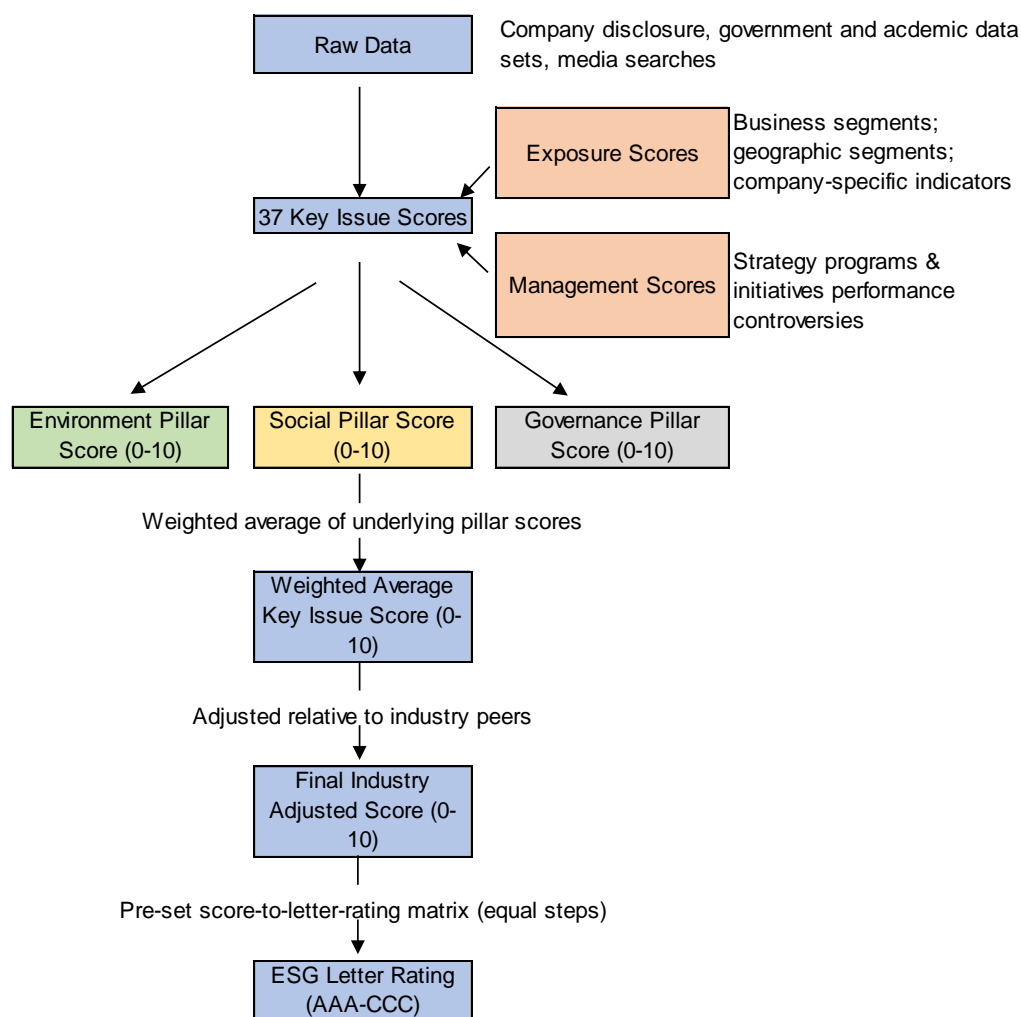
thousands of data points across 37 ESG key issues (Chart 12 and Table 10), and the weighted average scores are then compared with companies in the same industry across regions to arrive at a relative letter-scale score.

- **ESG Controversy:** a score from zero to 10, with “zero” being the most severe controversy. MSCI’s controversy score is shorter term in nature. MSCI monitors if companies engage in any controversies and assesses their impact. A few examples of controversial categories are toxic emissions and waste, labor management relations, human rights concerns, bribery and fraud.

MSCI index-tracking ESG ETFs accept the following data points as input, in addition to ESG Rating and ESG Controversy scores and other in-house proprietary data:

- MSCI conducts research on “**ESG Business Involvement**” to identify companies that are involved in certain industries and activities such as the production of controversial weapons, tobacco products. All ESG ETFs that screen controversial businesses (Table 12) rely on the results from this research to different degrees.
- **ESG Sustainable Impact Metrics:** this is a positive screen to identify companies that aim to address at least one of the major social and environmental challenges as defined by the UN Sustainable Development Goals.

Chart 12: MSCI ESG Rating Flow Chart



Source: NBF, MSCI

Data-driven ESG rating methodologies have generally complex inputs and algorithms, and a slight difference in any of the steps can cause variation in the final score. Different rating agencies may have separate data sources, independent measurement processes and results, alternate key issues, different treatment of missing data, or conflicting ways of looking at controversies. Sustainalytics, for example, calculates what they call “unmanaged risks” for each of the key issues. “Unmanaged risks” is calculated by subtracting risks that are being managed by the company from the total risk exposure that the company faces. This measurement method is different from MSCI’s process. Another example is that “nuclear power” and related industries like uranium mining might get screened out of one index, but another agency may consider it to be a low-carbon “green” technology that contributes to greenhouse gas reduction. Because of these possible discrepancies, investors should carefully research the methodology of their chosen ESG rating agency to ensure it aligns with their own values. The summary tables below can assist with this decision-making.

Table 10: MSCI's 37 Key Issues

3 Pillars	10 Themes	37 ESG Key Issues
Environment	Climate Change	Carbon Emissions Product Carbon Footprint Financing Environmental Impact Climate Change Vulnerability
	Natural Resources	Water Stress Biodiversity & Land Use Raw Material Sourcing
	Pollution & Waste	Toxic Emissions & Waste Packaging Material & Waste Electronic Waste
	Environmental Opportunities	Opportunities in Clean Tech Opportunities in Green Building Opp's in Renewable Energy
Social	Human Capital	Labor Management Health & Safety Human Capital Development Supply Chain Labor Standards
	Product Liability	Product Safety & Quality Chemical Safety Financial Product Safety Privacy & Data Security Responsible Investment Health & Demographic Risk
	Stakeholder Opposition	Controversial Sourcing
	Social Opportunities	Access to Communications Access to Finance Access to Health Care Opp's in Nutrition & Health
Governance	Corporate Governance	Board Pay Ownership Accounting
	Corporate Behavior	Business Ethics Anti-Competitive Practices Tax Transparency Corruption & Instability Financial System Instability

Source: NBF, MSCI

6. ESG ETF Methodology

Below we present descriptions for each **ESG equity index** tracked by ETFs in Canada:

6.1. MSCI ESG Indices

MSCI is the index provider to 14 ESG ETFs in Canada. MSCI offers *five* different kinds of ESG index linked to Canadian ETFs. The methodologies are described below and summarized in Table 11.

MSCI Women's Leadership Select Index (RLDR). This index aims to invest in companies that exhibit a commitment towards gender diversity in executive (Board) and leadership positions (Director or executive leadership role). Companies which have faced severe controversies, especially in Labor Rights are excluded. This index is sector-neutral relative to the region's all-cap broad market index. Within each sector, constituents of the index are weighted based on free-float market capitalization.

MSCI Extended ESG Focus Index (XESG, XSUS, XSEA, XSEM). This index series aims to maximize its exposure to positive ESG factors while exhibiting risk and return characteristics similar to each regional market-cap-weighted index via quantitative optimization. The index excludes constituents of the parent index with ESG Controversy Score of zero. Companies missing a Controversy Score or ESG Rating are also excluded. The ensuing optimization process aims to maximize exposure to higher ESG scores, subject to a pre-determined level of predicted tracking error within a small band around the passive parent benchmark.

MSCI ESG Leaders Index (ESGA, ESGY, ESGE, ESGG). This index series aims to capture companies that have high ESG Ratings relative to their sector peers, so that the best-in-class companies (from an ESG perspective) could be included. This index series requires new additions to have an ESG Rating of 'BB' or above and an ESG Controversy Score of 3 or above. Companies in certain business activities identified by the ESG Business Involvement Screening Research are excluded. For each sector, eligible securities are ranked based on ESG Rating & ESG Scores, ESG Trend and market cap among other factors. Securities from the ranked universe are then selected, with preference to higher market capitalization, 'AAA' and 'AA' ESG ratings until the target 50% sector coverage by cumulative free float-adjusted market capitalization is reached. The securities are weighted based on free float-market capitalization.

Table 11: Selected MSCI ESG Index Methodology Comparison

		MSCI ESG Extended Focus Index	MSCI ESG Leader Index	MSCI ESG Select Impact ex Fossil Fuels Index	MSCI ESG Choice ESG Screened Index
Screening Universe		MSCI IMI Index (Large & Mid & Small) - Canada; MSCI Standard Index (Large & Mid) - other regions	MSCI Standard Index (Large & Mid) - all regions	MSCI Standard Index (Large & Mid) - all regions	MSCI IMI Index (Large & Mid & Small) - Canada; MSCI Standard Index (Large & Mid) - other regions
Exclusion Criteria	Controversial Business	Controversial Business*			
	ESG Score, ESG Rating	Controversy Score = 0 ('Red Flag' companies)	Existing Controversy Score = 0	<30% of sales from one or more of the themes as defined by Impact Metrics Controversy Score <= 2	Controversy Score <= 2 (For Canada, Controversy Score = 0)
			ESG Rating <= B	Securities of companies that have proved and probable coal reserves and/or oil and natural gas reserves used for energy purposes.	ESG Rating <= BB
			New addition Controversy Score < 2 ESG Rating <= B		
	Others	Missing Controversy Score Missing ESG Rating or Score	NA	NA	Missing Controversy Score Missing ESG Rating
Weighting Method		Optimization	Ranked by ESG rating weighted by Mkt Cap	Ranked by ESG rating weighted by Mkt Cap	Weighted by Mkt Cap

*Each Index has its own Controversial Business Criteria. Please refer to Table 12; Source: NBF, MSCI, ETF Providers

MSCI Select Impact ex Fossil Fuels (CESG, CESG/B). The parent index is the MSCI ESG Leaders Index for respective regions. On top of the exclusions made by the Leaders index, the Select Impact ex Fossil Fuels index also excludes companies that have “proved and probable” coal/oil/natural gas reserves used for energy purposes. In order to be included, a company must generate a cumulative minimum of 30% of sales from one or more of the social themes as defined by Sustainable Impact Metrics. In addition, this index has a higher inclusion threshold for Controversy Score, which must be at least “3” to be considered. Lastly, the securities are weighted in proportion to their weights in the parent Index.

MSCI Choice ESG Screened Index (XCSR, XUSR, XDSR). This index series excludes companies involved in controversial businesses, i.e., those with a controversy score below 3 and MSCI ESG Rating below ‘BBB’. Companies without controversy score or ESG rating are excluded as well. In addition to the controversial businesses screening in the Leaders series, this index also excludes adult entertainment and fossil fuel businesses. Companies tied to the fossil fuel industry but generating more than 50% of its revenue from renewable energy and alternative fuels are not excluded. The Canada Index also excludes cannabis companies. This index series is market cap-weighted.

In filing: As of the time of this report’s writing, BlackRock filed a preliminary prospectus for iShares ESG MSCI Canada Leaders Index ETF (**XCLR**), iShares ESG MSCI USA Leaders Index ETF (**XULR**) and iShares ESG MSCI EAFE Leaders Index ETF (**XDLR**). They will track the MSCI ESG Extended Leaders Index series for each corresponding region.

6.2. Scientific Beta Indices

Scientific Beta—Desjardins RI index series is jointly developed by Desjardins and Scientific Beta. This product suite is aligned with Desjardins’ pledge for its public markets portfolio to have a 25% lower carbon footprint than the companies making up public bond and equity market benchmarks by 2020. ESG principles are integrated into Desjardin ETFs that track the following indices:

Scientific Beta Multifactor Low CO2 Index (DRFU, DRFC, DRFD, DRFE). This index excludes companies with the highest carbon intensity so that the carbon intensity of the index is lower than the benchmark, while targeting sector neutrality. The securities in the low-carbon filtered universe are further screened and weighted based on factors of size, valuation, momentum, volatility, profitability and “low investment”.

Scientific Beta Multifactor Fossil Fuel Reserves Free index (DRFG). In addition to the ESG screening described above, this index also excludes stocks that are classified in the “Energy—Fossil Fuels” business sector; companies owning reserves of fossil fuels or with a significant share of revenues deriving from this type of energy source; or companies with a significant portion of thermal coal in its power generation fuel mix. The remaining portfolio then follows a similar multi-factor strategy described above. The index pursues sector neutrality by allocating the weight from the excluded sectors pro rata over to other sectors.

Scientific Beta Cap-Weighted Indices (DRMC, DRMU, DRMD and DRME in filing) The securities in this index need to pass the ESG and low carbon screens in order to be considered.

6.3. Other ESG Indices

NASDAQ Future Global Sustainability Leader Index (ETHI). This index excludes companies with significant exposure to the fossil fuel industry or engaged in activities deemed inconsistent with responsible investment considerations. Each *included* company must be identified by the Responsible Investment Committee as a “climate leader” — in other words, it must have a carbon efficiency in the top one-third of companies in its industry. In May of 2020, the index introduced an industry sector cap, so that the industry weights of the Index cannot stray from those of the NASDAQ Developed Markets Index by more than 3%.

Jantzi Social Index (XEN). This index created by Sustainalytics (previously known at Jantzi Research) is tracked by the *first* ESG ETF in Canada - XEN from iShares. The index uses two types of exclusionary criteria: “product involvement” in non-ESG industries like tobacco, and major negative ESG impact. After the negative screen, the index uses an in-house Best-of-Sector methodology to positively screen companies with leading sustainability performance. In order to maintain sector weights near the S&P/TSX 60 Index, the Jantzi Social Index imposes constraints of $\pm 5\%$ around the large cap index’s sector weights.

TOBAM Maximum Diversification Index (MKC, MUS, MWD, MXU, MEU, MEE). This index series is not explicitly designed as an ESG index; however, it integrates SRI Criteria consistent with TOBAM's sustainable view by excluding companies from a third-party Blacklist for Socially Responsible Investment (published by Norges Bank). Currently 17 Canadian companies are on TOBAM's SRI Blacklist. Exclusions are mainly from health care (cannabis), energy, materials and utilities sectors. In addition, the optimization process for constructing the final portfolio also incorporates a constraint to reduce the carbon footprint by at least 20%.

S&P ESG Index (ESG). This index excludes companies in certain businesses or those having UN Global Compact scores. After the initial screening, for each GICS industry group, companies are selected in decreasing order of S&P DJI ESG Score until 75% of the market cap within each GICS industry group is reached, and the companies are weighted by market cap as well. The S&P DJI ESG Scores are based on data gathered by SAM, a division of RobecoSAM, through SAM's Corporate Sustainability Assessment (CSA).

Solactive Wealthsimple North America Socially Responsible Factor Index (WSRI, WSRD): The index excludes companies involved in human rights violations, major controversies or controversial businesses. Companies with low gender diversity on their boards and those with high carbon intensity within their sector are also excluded. The index further screens companies by momentum, value and quality factors, and then risk-weights the final constituents.

6.4. Actively Managed Equity ESG ETFs

These are ETFs that offer ESG-aligned portfolios without tracking a third-party index.

- **AGFiQ Global ESG Factors ETF (QEF):** The manager of QEF uses an in-house quantitative multi-factor model to evaluate global equities, ranking them based on ESG factors. Companies with severe ESG controversies and companies in certain businesses are excluded. Growth, value, quality and risk factors are analyzed and may be used as control variables.
- **BMO Women in Leadership Fund ETF (WOMN):** WOMN invests in U.S. and Canadian-based companies that satisfy one or both of the gender diversity criteria of having a female CEO or having at least 25% female members on the board. WOMN may invest up to 100% in foreign securities and up to 10% in securities outside of North America.
- **Fidelity Sustainable World ETF (FCSW):** FCSW invests in companies that meet certain ESG criteria and may exclude companies involved in certain controversial businesses or severe ESG-related controversies. FCSW uses a quantitative multi-factor model to screen for companies with fundamental characteristics such as low valuation, positive momentum, high quality or strong growth.
- **Mackenzie Global Leadership Impact ETF (MWMN):** MWMN is sub-advised by Impax Asset Management. MWMN is actively managed but benchmarked to the Impax Global Women's Leadership Index, which consists of companies that demonstrate a commitment to advancing and empowering women through gender diversity on their boards, in management and through other policies and programs. In addition, companies in the index needs to meet certain ESG and/or sustainability thresholds, including an exclusion for certain controversial businesses and companies involved in severe ESG controversies.
- **NBI Sustainable Canadian Equity ETF (NSCE):** NSCE is sub-advised by Fiera Capital and primarily invests in large and medium cap companies in Canada. The sub-advisor undertakes an ESG analysis to assess the quality, capital allocation ability and long-term sustainability of a business. An exclusionary screening is applied in as part of the active stock selection process. NSCE aligns with United Nations Sustainable Development Goals (UN SDG).
- **NBI Sustainable Global Equity ETF (NSGE):** NSGE is sub-advised by AllianceBernstein Canada Inc. and primarily invests in large and medium cap companies around the world. The sub-advisor selects companies that generate revenues from products and services that are aligned with the United Nations Sustainable Development Goals (UNSDGs). The sub-advisor invests exclusively in themes directly aligned with the UNSDGs and excludes certain controversial businesses. The weighting is determined by each stock's contribution to active risk and thematic exposure.

6.5. Multi-Asset ESG ETFs

- **BMO Balanced ESG ETF (ZESG):** ZESG employs a strategic asset allocation strategy and primarily invests in other BMO ESG ETFs with approximately 60% in equity securities and 40% in fixed income. ZESG may also invest directly in equity and fixed income securities or other non-ESG ETFs.
- **In filing:** As of the time of this writing, BlackRock just filed a preliminary prospectus for four asset allocation ETFs.
 - iShares ESG Conservative Balanced ETF Portfolio (**GCNS**). It will have approximately 40% equity exposure and 60% fixed income exposure.
 - iShares ESG Balanced ETF Portfolio (**GBAL**). It will have approximately 60% equity exposure and 40% fixed income exposure.
 - iShares ESG Growth ETF Portfolio (**GGRO**). It will have approximately 80% equity exposure and 20% fixed income exposure.
 - iShares ESG Equity ETF Portfolio (**GEQT**). It will have approximately 100% equity exposure.

6.6. Fixed Income ETFs

6.6.1. Index tracking

- **Bloomberg Barclays MSCI Corporate Sustainability Index - (ESGB, ESGF):** This index starts with a “parent index” (Bloomberg Barclays Corporate Index), then screens out issuers involved in controversial businesses as well as issuers with ESG ratings below ‘BBB’ or having an ESG controversy score of 0 (as determined by MSCI). Constituents are investment grade bonds only and market value-weighted.
- **Bloomberg Barclays MSCI ESG Focus Index - (XSAB, XSTB):** This index starts with the Bloomberg Barclays Aggregate Bond Index as the parent universe, then screens out issuers involved in controversial businesses as well as issuers without ESG ratings or having an ESG controversy score of 0 (as determined by MSCI). The index uses mathematical optimization to maximize ESG exposure, targeting issuers with the highest MSCI ESG Ratings in each sector, while preserving similar risk characteristics to its parent index.
- **In filing:** Horizons S&P Green Bond Index ETF (**HGRN**). This ETF tracks the S&P Green Bond U.S. Dollar Select Index. The index includes only bonds denominated in U.S. dollars and flagged as ‘green’ by Climate Bonds Initiative (CBI). The company must clearly indicate the bond’s ‘green’ label and provide rationale for this indication, such as the intended use of proceeds. CBI will use company disclosures from credible sources to make the ‘green’ determination. The index is market value-weighted. Each issuers’ weight is capped at 10% and the total High Yield portion is capped at 20%.

6.6.2. Actively managed

- **Desjardins RI Active Canadian Bond - Low CO2 ETF (DRCU):** DRCU primarily invests in investment-grade debt securities issued by Canadian governments, government agencies and corporations that meet certain ESG criteria determined by the manager, including debt securities of issuers that reduce the investment carbon intensity levels of the overall portfolio. Companies involved in certain controversial businesses are excluded from the portfolio.
- **NBI Sustainable Canadian Bond ETF - (NSCB):** NSCB is sub-advised by AlphaFixe Capital Inc. and primarily invests in bonds designed to raise funds for projects or businesses that have a positive environmental or social impact and that are issued by Canadian federal or provincial governments or by Canadian corporations. The investable universe consists of sustainable bonds, debt instruments designed to raise funds for business or causes that have a positive environment or social impact. At least 85 % of the portfolio shall be constituted of bonds designed to raise funds for projects or businesses that have a positive environmental or social impact. NSCB aligns with United Nations Sustainable Development Goals (UN SDG).
- **Harvest US Investment Grade Bond Plus ETF (HUIB):** HUIB is sub-advised by Amundi Pioneer. HUIB primarily invests in U.S. investment-grade corporate debt securities. The sub-advisor uses both technical and fundamental analysis for security selection. In addition, a proprietary model is used to incorporate ESG into risk analysis and position selection decisions.

Appendix 1: “Controversial” Businesses

In some form or another, most ESG ETFs employ *negative screens*; in other words, they exclude companies in certain sectors or industries, or they exclude companies that derive some portion of their revenue from said businesses or industries. In Table 12 below, we summarize the controversial business that various index providers screen out from their ESG indices. For more details around the specific parts of the business that are excluded, please refer to Table 19 in Appendix 3.

- Tobacco and Weapons are the two most excluded business across all the ESG indices (16 out of 18 ESG indices exclude companies involved in tobacco and 15 exclude companies involved in weapons). For indices that do exclude tobacco and weapons, companies that are in the *production* business are excluded, while those which are in the *retail, distribution and supply* activities could also be excluded based on the percentage of company revenue derived from these sub-sectors. For example, the S&P 500 ESG Index specifically excludes companies with tobacco-related sales accounting for greater than 10% of revenue or those that have more than 25% stake in such companies.
- Fossil fuel, alcohol and gambling all rank as the “second most excluded” activities next to tobacco and weapons. 8 out of 18 indices exclude companies involved in these businesses. For example, **ETHI**’s index excludes companies that have fossil fuel reserves, infrastructure, mining or extraction activity, and those that derive more than 5% of total revenue from providing products, services or financing specific to the fossil fuel industry. However, other indices differ slightly on fossil fuel business exclusions. For example, MSCI’s ESG Extended Focus Index does not exclude companies with revenue from *non-extraction* activities (e.g., exploration, surveying, processing, refining) related to oil sands. As a result, **XESG** owns companies such as Suncor Energy and Gibson Energy, both of which derive substantial portions of revenue from midstream and downstream activities related to fossil fuels.
- Outside the world of index management, there is a healthy debate around the “ESG-ness” of the emerging cannabis industry. This is well-reflected by the diversity of exposures in Canadian ESG ETFs. The MSCI Canada Choice Screened Index (tracked by **XCSR**) explicitly states exclusion for cannabis companies, an exclusion that is not mentioned for that index suite’s other regions. The Norges Bank “Blacklist” excludes Cannabis companies, which is why they are not part of the TOBAM indices tracked by the Mackenzie Max Diversification ETF suite. On the active side, NBI Sustainable Canadian Equity ETF (**NSCE**) is the only active ESG ETF that strictly screens out cannabis companies. However, one-third of Canada-focused ESG ETFs do hold cannabis companies (**ESGA**, **XESG**, **DRMC**).

Table 12 - Controversial Businesses Screened in Indices/ETFs' Methodologies								Sorted by Name
Index	Major Controversial Businesses Screened							ETF Tickers
	Tobacco	Weapons	Fossil Fuel	Alcohol	Gambling	Nuclear Power	Adult Entertainment	
Fixed Income								
Bloomberg Barclays MSCI ESG Focus	X	X	-	-	-	-	-	XSAB, XSTB
Bloomberg Barclays Sustainability	X	X	-	X	X	X	X	ESGF, ESGB
S&P Green Bond US Dollar Select Index	-	-	-	-	-	-	-	HGRN***
Equity								
Nasdaq Future Global Sustainability Leaders	X	X	X	X	X	X	X	ETHI
Jantzi Social	X	-	-	-	-	X	-	XEN
MSCI ESG Choice	X	X	X	X	X	X	X	XCSR, XUSR, XDSR
MSCI ESG Extend Focus	X	X	X	-	-	-	-	XESG, XSUS, XSEA, XSEM
MSCI ESG Leader*	X	X	-	X	X	X	-	ESGA, ESGY, ESSE, ESGG
MSCI Extended Leader*	X	X	-	X	X	X	-	XCLR***, XJLR***, XDLR***
MSCI ESG Screened	X	X	X	-	-	-	-	
MSCI ESG Select	X	X	-	X	X	X	-	
MSCI ESG Select Impact ex Fossil Fuels	X	X	X	X	X	X	-	CESG, CESG/B
MSCI Women's Leadership Select	-	-	-	-	-	-	-	RLDR
S&P 500 ESG Index	X	X	-	-	-	-	-	ESG, ESG/F
Scientific Beta Low Carbon	X	X	-	-	-	-	-	DRFU, DRFC, DRFD, DRFE, DRMC, DRMU, DRMD, DRME***
Scientific Beta Fossil Fuel Free	X	X	X	-	-	-	-	DRFG
Solactive Wealthsimple Social	X	X	X	X	X	-	-	WSRI, WSRD
TOBAM Max Diversification	X	X	X	-	-	-	-	MKC, MUS, MWD, MXU, MEU, MEE
Actively Managed ETFs								
Fixed Income								
Desjardins RI Active CA Bond - Low CO2	X	X	X	-	-	-	-	DRCU
Harvest US Investment Grade Bond Plus	X	X	X	-	-	-	-	HUIB
NBI Sustainable Canadian Bond ETF	X	X	X	X	X	-	X	NSCB
Equity								
AGFiQ Global ESG Factors ETF	X	X	-	-	-	-	-	QEF
BMO Balanced ESG ETF	X	X	-	X	X	X	X	ZESG**
BMO Women In Leadership Fund ETF	-	-	-	-	-	-	-	WOMN
Fidelity Sustainable World ETF	X	X	X	X	X	X	X	FCSW
Mackenzie Global Leadership Impact	X	X	-	-	-	-	-	MWMN
NBI Sustainable Canadian Equity ETF	X	X	X	X	X	X	X	NSCE
NBI Sustainable Global Equity ETF	X	X	-	X	X	-	-	NSGE

*Additional climate-related exclusions and related changes could be effective in November 2020

** Based on constituents' screening criteria as of February 28, 2020. ***In filing

Appendix 2: Canadian Listed ESG ETFs

Table 13 - Passively Managed Equity ESG ETFs - Canada Region													Grouped by Classification, Sorted by AUM				
Fund Name	Ticker	Classification	Active Share		ETF Metrics						Ann. Returns (%)**			Holdings			
			Active Share (%)	Cost of Active Share	MER (%)	AUM \$M	Maxdraw down (%)	ROE	D/E	P/E	1 Year	3 Year	5 Year	Aggr # Holdings	Median Mcap \$B		
S&P/TSX Composite Index					33.47.91.621						-2.23.94.4	230	37				
1 iShares ESG Aware MSCI Canada Index ETF	XESG	Minimize Deviation	31	0.35	0.17	24	33.7	6.5	1.6	24	-4.1	2.4	3.8	122	34		
2 iShares Jantzi Social Index ETF	XEN	Best of Sector	61	0.80	0.55	183	33.7	8.7	1.6	20	-10.7	1.0	3.0	49	43		
3 BMO MSCI Canada ESG Leaders Index ETF	ESGA	Best of Sector	55	0.20	0.17	11	31.7	8.5	1.4	19	-3.1	3.2	5.5	43	46		
4 Mackenzie Maximum Diversification Canada	MKC	Broad	52	0.85	0.50	343	32.8	7.7	0.9	20	0.6	4.9	4.5	97	16		
5 Desjardins RI Canada Multifactor - Low CO2 ETF	DRFC	Environmental	68	0.75	0.57	204	35.2	6.3	1.2	20	-13.6	-2.6	0.0	45	18		
6 Desjardins RI Canada - Low CO2 Index ETF	DRMC	Environmental	40	0.57	0.29	11	31.9	9.7	2.0	17	-2.6	3.1	2.5	61	80		
7 RBC Vision Women's Leadership MSCI Canada	RLDR	Social	28	0.81	0.29	141	33.6	8.2	1.5	19	-5.6	2.8	-	124	47		
8 iShares ESG Advanced MSCI Canada Index ETF	XCSR	Score Threshold	47	0.23	0.17	2	29.7	8.8	1.9	17	5.2	7.7	9.2	131	45		

*NAV based return data as of 2020-06-30. Backtested return data in lighter shade. Source: National Bank of Canada, Bloomberg.

Table 14 - Passively Managed Equity ESG ETFs - U.S. Region											Grouped by Classification, Sorted by AUM					
Fund Name	Ticker	Classification	Active Share		ETF Metrics						Ann. Returns (%)**			Holdings		
			Active Share (%)	Cost of Active Share	MER (%)	AUM \$M	Maxdraw down (%)	ROE	D/E	P/E	1 Year	3 Year	5 Year	Aggr # Holdings	Median Mcap \$B	
Benchmark: S&P 500 Index							25.9	12.5	1.4	25	10.6	12.5	12.7	503	188	
1 iShares ESG Aware MSCI USA Index ETF	XSUS	Minimize Deviation	27	0.42	0.23	18	25.8	12.8	1.3	27	14.2	12.8	12.5	308	153	
2 Invesco S&P 500 ESG Index ETF	ESG*	Best of Sector	26	0.23	0.17	14	25.4	13.7	1.4	20	13.5	13.2	12.5	311	189	
3 BMO MSCI USA ESG Leaders Index ETF	ESGY	Best of Sector	49	0.24	0.23	12	25.9	14.3	1.2	27	11.8	12.6	12.0	312	147	
4 Mackenzie Maximum Diversification US Index	MUS	Broad	56	0.69	0.50	107	25.5	6.0	1.5	48	11.3	11.0	10.2	480	41	
5 Desjardins RI USA Multifactor - Low CO2 ETF	DRFU	Environmental	67	0.69	0.57	92	28.1	9.4	1.0	29	4.6	5.5	7.0	210	42	
6 Desjardins RI USA - Low CO2 Index ETF	DRMU	Environmental	34	0.52	0.29	74	23.7	14.2	1.5	26	18.2	10.0	9.1	314	182	
7 iShares ESG Advanced MSCI USA Index ETF	XUSR	Score Threshold	54	0.21	0.23	2	25.4	10.5	1.9	27	23.2	18.8	16.5	292	180	

* currency hedged unit also available. **NAV based return data as of 2020-06-30. Backtested return data in lighter shade. Source: National Bank of Canada, Bloomberg.

Table 15 - Passively Managed Equity ESG ETFs - International Region													Grouped by Classification, Sorted by AUM				
Fund Name	Ticker	Classification	Active Share		ETF Metrics						Ann. Returns (%)**			Holdings			
			Active Share (%)	Cost of Active Share	MER (%)	AUM \$M	Maxdraw down (%)	ROE	D/E	P/E	1 Year	3 Year	5 Year	Aggr # Holdings	Median Mcap \$B		
MSCI EAFE Index							25.6	7.9	1.8	22	-2.2	2.4	3.8	930	37		
1 iShares ESG Aware MSCI EAFE Index ETF	XSEA	Minimize Deviation	30	0.24	0.28	18	25.4	7.6	1.7	20	-0.2	3.0	4.3	446	46		
2 BMO MSCI EAFE ESG Leaders Index ETF	ESGE	Best of Sector	49	0.15	0.28	5	26.0	9.4	1.4	19	0.1	3.0	4.2	430	49		
3 Wealthsimple Dev ex North AM Social Responsible	WSRD	Broad	NA	NA	0.28	192	NA	NA	NA	NA	-	-	-	NA	NA		
4 Mackenzie Max Divers. All World Dev ex North Am	MXJ	Broad	54	0.65	0.56	55	20.7	8.8	1.3	23	4.1	2.9	4.6	689	19		
5 Mackenzie Max Divers. Developed Europe Index	MEU	Broad	66	0.50	0.54	17	24.0	9.4	1.9	24	3.6	2.7	4.1	365	21		
6 Desjardins RI Dev Int'l Multifactor - Low CO2 ETF	DRFD	Environmental	60	0.81	0.69	67	25.3	7.7	1.3	17	-1.8	4.8	3.5	444	21		
7 Desjardins RI Developed Int'l Low CO2 Index ETF	DRMD	Environmental	52	0.25	0.34	45	10.9	19.4	1.1	19	-0.8	6.9	3.5	602	47		
8 iShares ESG Advanced MSCI EAFE Index ETF	XDSR	Score Threshold	52	0.14	0.28	6	24.4	9.0	1.2	20	3.6	4.7	5.9	519	35		
MSCI Emerging Market Index							23.6	10.3	1.2	15	-0.8	3.5	4.7	890	39		
9 iShares ESG Aware MSCI Emerg Mkts Index ETF	XSEM	Minimize Deviation	45	0.17	0.34	9	25.7	10.4	1.3	14	0.3	3.2	5.4	464	30		
10 Mackenzie Max Divers. Emerg Markets	MEE	Broad	64	0.47	0.56	63	27.4	8.4	1.2	76	-1.0	2.6	2.5	749	10		
11 Desjardins RI EM Multifactor - Low CO2 ETF	DRFE	Environmental	71	0.68	0.74	115	26.4	8.5	1.4	12	-8.0	5.9	3.0	313	14		
MSCI ACWI Index							26.2	9.1	1.5	19	5.9	8.4	8.8	2,291	6		
12 BMO MSCI Global ESG Leaders Index ETF	ESGG	Best of Sector	56	0.11	0.28	6	26.2	11.5	1.3	24	7.2	8.8	8.9	785	78		
13 Mackenzie Max Divers. All World Developed	MWD	Broad	57	0.58	0.55	327	22.9	8.4	1.5	30	8.6	8.1	7.9	887	34		
14 Wealthsimple North America Socially Responsible	WSRI	Broad	NA	NA	0.23	190	NA	NA	NA	NA	-	-	-	NA	NA		
15 Horizons Global Sustainability Leaders Index ETF	ETHI	Environmental	85	0.34	0.51	21	29.9	17.7	1.3	25	22.5	19.2	14.2	108	107		
16 Desjardins RI Global Multifactor - Fossil Free ETF	DRFG	Environmental	68	0.70	0.69	9	27.0	9.5	1.3	20	1.3	9.2	7.6	905	36		
17 CI First Asset MSCI World ESG Impact ETF	CESG*	Score Threshold	96	0.47	0.67	5	24.9	11.3	0.8	21	14.5	9.6	6.6	91	47		

* currency hedged unit also available. **NAV based return data as of 2020-06-30. Backtested return data in lighter shade. Source: National Bank of Canada, Bloomberg.

Table 16 - Actively Managed Equity ESG ETFs													Sorted by AUM	
Fund Name	Ticker	Active Share		ETF Metrics						Returns (%)*			Holdings	
		Active Share (%)	Cost of Active Share	MER (%)	AUM \$M	ROE	D/E	P/E	P/B	1 Month	3 Month	1 Year	Aggr # Holdings	Median Mcap \$B
1 AGFiQ Global ESG Factors ETF	QEF	69	0.33	0.45	65	11.0	1.5	20	2	2.1	14.9	8.2	193	107
2 Fidelity Sustainable World ETF	FCSW	77	0.56	0.62	45	14.2	1.1	18	3	1.6	14.2	7.4	197	79
3 Mackenzie Global Leadership Impact ETF	MWMN	71	0.59	0.63	14	12.1	1.8	19	3	0.9	15.2	3.9	410	130
4 NBI Sustainable Global Equity ETF	NSGE	91	0.56	0.73	3	14.0	0.9	34	4	3.0	23.7	-	52	34
5 BMO Women In Leadership Fund ETF	WOMN	92	0.22	0.39	2	11.5	1.8	20	3	0.7	13.2	6.5	40	68
6 NBI Sustainable Canadian Equity ETF	NSCE	69	0.50	0.68	2	14.6	1.8	18	3	0.3	9.9	-	30	26
7 BMO Balanced ESG ETF	ZESG	NA	NA	0.20	6	NA	NA	23	2	1.4	11.2	-	1,248	56

*NAV based return data as of 2020-06-30. Source: National Bank of Canada, Bloomberg.

Table 17 - Passively Managed Fixed Income ESG ETFs										Sorted by AUM	
Fund Name		Ticker	ETF Metrics				Ann. Returns (%)*			Holdings	
			MER (%)	AUM \$M	YTM (%)	Duration	1 Year	3 Year	5 Year	Aggr # Holdings	% Green Bond
Canada Universe Bond					1.40	8.32	7.7	5.2	4.0	1,332	0.9
1	Ishares ESG Canadian Short Term Bond Index ETF	XSTB	0.17	45	0.96	2.65	4.2	-	-	155	0.2
2	Ishares ESG Canadian Aggregate Bond Index ETF	XSAB	0.17	32	1.48	8.22	7.5	-	-	305	0.9
3	BMO ESG US Corporate Bond Hedged to CAD Index ETF	ESGF	0.23	15	2.07	7.70	9.1	5.6	5.2	111	0.0
4	BMO ESG Corporate Bond Index ETF	ESGB	0.17	8	2.34	6.41	6.5	4.9	4.1	178	0.3

*NAV based return data as of 2020-06-30. Backtested return data in lighter shade. Source: National Bank of Canada, Bloomberg.

Table 18 - Actively Managed Fixed Income ESG ETFs										Sorted by AUM	
Fund Name	Ticker	ETF Metrics				Returns (%)*			Holdings		
		MER (%)	AUM \$M	YTM (%)	Duration	1 Month	3 Month	1 Year	Aggr # Holdings	% Green Bond	
1 Desjardins RI Active Canadian Bond - Low CO2 ETF	DRCU	0.41	39	1.72	8.20	1.7	6.0	7.7	155	18.5	
2 Harvest US Investment Grade Bond Plus ETF	HUIB	0.54	10	3.25	8.60	2.4	12.0	-	127	1.4	
3 NBI Sustainable Canadian Bond ETF	NSCB	0.62	5	1.54	7.40	1.5	5.3	-	23	59.7	

*NAV based return data as of 2020-06-30. Source: National Bank of Canada, Bloomberg.

Appendix 3: MSCI Controversial Business Exclusion in Details

Table 19 - MSCI Controversial Businesses Exclusion in Details						<i>Sorted by Name</i>
	Index	Raw Material	Production	Distribution/Retail/Supply	Ownership*	
Tobacco	MSCI ESG Choice	X	X	X	-	
	MSCI ESG Extend Focus	-	X	X	X	
	MSCI ESG Leader	-	X	-	-	
	MSCI ESG Extended Leader	-	X	-	-	
	MSCI ESG Screened	-	X	X	-	
	MSCI ESG Select	-	X	X	X	
	MSCI ESG Select Impact ex Fossil Fuels	-	X	-	-	
Weapons	MSCI ESG Choice	-	X	X	X	
	MSCI ESG Extend Focus	-	X	X	X	
	MSCI ESG Leader	-	X	-	X	
	MSCI ESG Extended Leader	-	X	X	X	
	MSCI ESG Screened	-	X	X	X	
	MSCI ESG Select	-	X	-	X	
	MSCI ESG Select Impact ex Fossil Fuels	-	X	X	X	
Fossil Fuel	MSCI ESG Choice	X	X	X	X	
	MSCI ESG Extend Focus	X	X	X	-	
	MSCI ESG Leader	-	-	-	-	
	MSCI ESG Extended Leader	-	-	-	-	
	MSCI ESG Screened	X	X	X	-	
	MSCI ESG Select	-	-	-	-	
	MSCI ESG Select Impact ex Fossil Fuels	X	-	-	X	
Alcohol	MSCI ESG Choice	-	X	X	-	
	MSCI ESG Extend Focus	-	-	-	-	
	MSCI ESG Leader	-	X	-	-	
	MSCI ESG Extended Leader	-	X	-	-	
	MSCI ESG Screened	-	-	-	-	
	MSCI ESG Select	-	X	-	-	
	MSCI ESG Select Impact ex Fossil Fuels	-	X	-	-	
Gambling	MSCI ESG Choice	-	-	X	X	
	MSCI ESG Extend Focus	-	-	X	-	
	MSCI ESG Leader	-	-	X	-	
	MSCI ESG Extended Leader	-	-	X	-	
	MSCI ESG Screened	-	-	-	-	
	MSCI ESG Select	-	-	X	-	
	MSCI ESG Select Impact ex Fossil Fuels	-	-	X	-	
Nuclear Power	MSCI ESG Choice	X	X	X	X	
	MSCI ESG Extend Focus	-	-	-	-	
	MSCI ESG Leader	X	X	X	-	
	MSCI ESG Extended Leader	X	X	X	-	
	MSCI ESG Screened	-	-	-	-	
	MSCI ESG Select	X	X	X	-	
	MSCI ESG Select Impact ex Fossil Fuels	-	-	X	-	
Adult Entertainment	MSCI ESG Choice	-	X	X	-	
	MSCI ESG Extend Focus	-	-	-	-	
	MSCI ESG Leader	-	-	-	-	
	MSCI ESG Extended Leader	-	-	-	-	
	MSCI ESG Screened	-	-	-	-	
	MSCI ESG Select	-	-	-	-	
	MSCI ESG Select Impact ex Fossil Fuels	-	-	-	-	

* Companies that are not involved in controversial business operations

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