

Sustainability Equity Indexes

WHITEPAPER

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Environmental, Social, and Governance (“ESG”)¹ indices are no longer new. Some have been offered for over 30 years. In the last five years, ESG indices continued to mature to offer a new range of options that can be considered by institutional investors, particularly for indices that incorporate all E, S, and G considerations, and indices specifically addressing Environmental consideration.

This report reviews developments in the types of sustainability equity indices, categorizes these indices by their primary goals, describes the construction methodologies commonly used to build ESG indices, and provides key performance indicators (“KPIs”) for a sample of ESG indices. The report concentrates on the 51 ESG indices that were available from FTSE/Russell, MSCI and S&P Dow Jones Indices at the time of our analysis. Each provider also offers customized ESG indices. In addition to the ESG indices available from FTSE/Russell, MSCI, and S&P Dow Jones Indices reviewed here, other providers also offer ESG index products.

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¹ Please note that we use the terms “ESG” and “sustainability” interchangeably throughout this paper.

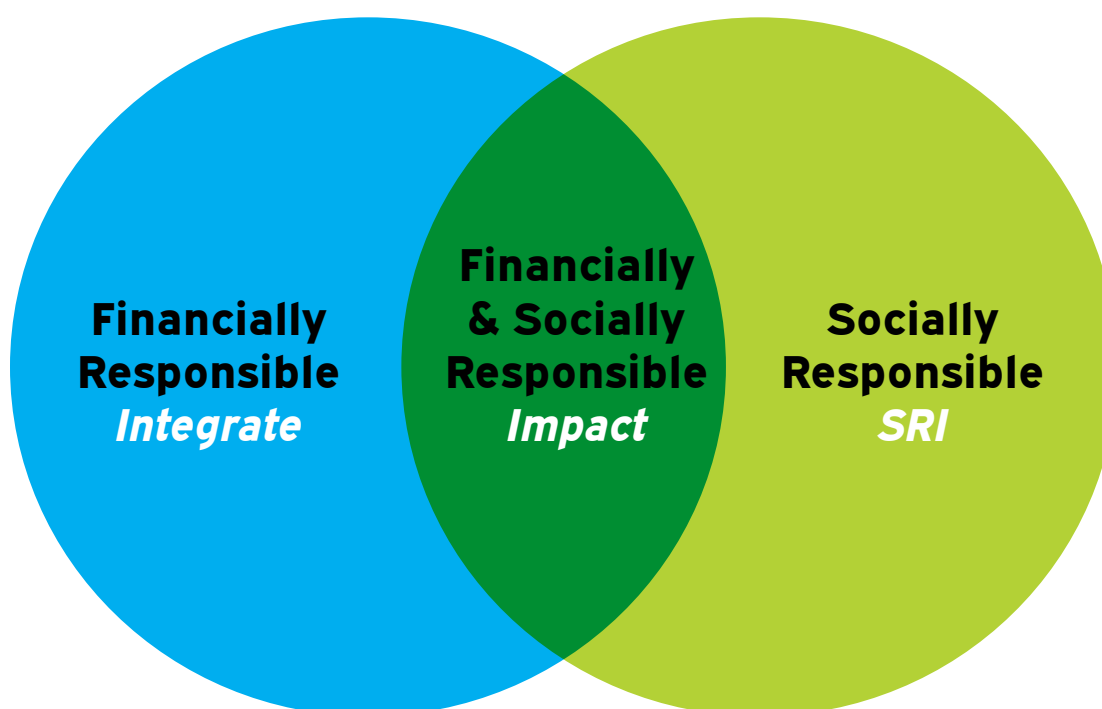


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Key findings

- **Focus on financial results were integral to the goals of roughly two-thirds of ESG equity indices.** Indices designed to integrate ESG factors for long-term financially responsible performance (Integrate) and indices designed for Impact (i.e., to meet and/or exceed market financial risk/return performance and generate a meaningful and quantifiable, where possible, environmental or social impact) together represented two-thirds of the 51 ESG indices offered by FTSE/Russell, MSCI and S&P Dow Jones Indices ("S&PDJI"). Socially responsible ("SRI") indices that focus on a socially responsible result without an explicit market or better risk/return goal accounted for the remaining third of these 51 indices.
- **ESG equity index construction approaches show reweighting securities is on the rise, but indexes built by excluding and/or selecting stocks still lead.** A growing number of sustainability indexes preserve the broad market exposure of the parent index (and consequently some parent index shareholder proxy voting and engagement potential) by reweighting the constituent stocks by ESG factor(s) rather than only excluding or selecting securities by ESG factors. Some ESG indexes maintain the parent index country, industry, and/or size characteristics to better match the return/risk of the parent index. A few ESG indexes are optimized to track the parent index risk and return within a relatively narrow range.
- **Expect more change.** Just as these indices evolved significantly over the previous five years, we expect further development in the coming years as the availability of ESG-related data increases and becomes more standardized. For example, climate-related indices are being augmented to incorporate Scope 3 greenhouse gas emissions (i.e., emissions from a company's supply chain and from the use of its products), instead of the sole focus on Scope 1 and Scope 2 emissions, and to address growing biodiversity concerns.
- **Comparability over time may be a challenge.** Index rule adjustments such as defining materiality; changing weights of underlying E, S, and G factors in ESG scores; introducing adjustments such as ESG momentum; and data quality improvements (as more companies report on ESG and reporting becomes more standardized) will likely enhance the fit of ESG indexes with institutional investor goals. However, these improvements may come at the expense of straight-forward historical comparability for any given index.
- **Consider stewardship ramifications in index selection.** There is increasing recognition that making changes to an investment portfolio such as divesting may not result in environmental and/or social changes in the real economy. At the same time, there is growing sophistication and some success in proxy voting and engagement efforts among institutional investors. Within this context, it can be valuable to understand and consider the relative breadth of the set of constituents for each ESG index compared to the parent index universe. From a stewardship perspective, indices that exclude companies or sectors may reduce the asset owner's ability to vote proxies and participate as a shareholder in engagement efforts.

- **ESG KPIs are often backward looking and represent a single point in time.** The E, S, and G KPIs we analyzed for a sample of ESG indexes often represent backward-looking assessments for a single point in time. The specific indicators may change over time. These considerations are similar to those with traditional financial metrics. Some indices are incorporating forward-looking metrics. Both backward- and forward-looking metrics may provide additional insights if they are tracked to observe patterns over time.
- **Parent index universe changes can materially skew parent E, S, and G metrics relative to ESG sub-indexes.** A notable example was in December 2020 when Tesla (TSLA) was added to the S&P 500® index. TSLA was later added to the S&P 500® ESG indexes at the regularly scheduled annual reconstitution for each index but after 2020 year-end. Thus, for example, as of December 31, 2020, the S&P 500® Weighted Average Green Revenue Share was over 10%, while each of its ESG sub-indexes fell below this level. This reconstitution inconsistency was rectified during 2021 and shows the sustainability sub-indices that added TSLA outperforming the parent index for green revenue share.
- **Asset managers are developing their own ESG indexes.** The overall market continues to shift as more asset managers offer ESG investment funds to represent the ESG indices of the major index providers and offer ESG investment funds based on the development of their own ESG indices and approaches to ESG.
- **ESG index license fees are coming down (very marginally).** ESG index license fees, even for simple indices like an ex-thermal coal index, still tend to be a few basis points higher than parent index license fees. While in part this may reflect the research required to develop and maintain sustainability indexes, it likely primarily reflects the much smaller relative market demand for ESG indices, compared to parent standard market cap weight indices, and index providers' ability to command higher prices at this juncture. Modest improvements have occurred in license fees for ESG indices compared to parent indices. We anticipate a continued trend toward more competitive license fees for ESG indices.

Overview

Rapid evolution in index construction and sustainability data exponentially broadened the type of indices available to benchmark sustainability equity portfolios and made passive equity investment in sustainability indices viable for a wide range of investor goals. Historically, sustainability equity investing primarily meant investing according to socially responsible values, typically labeled socially responsible investing ("SRI"). Investment strategies that went beyond simple exclusion of specific securities for a social or environmental value (such as ex-tobacco, ex-controversial weapons, or ex-fossil fuels) were few and mainly offered by active investment managers. Today, in addition to indices that capture social or environmental values without explicit concern for investment financial risk and return, indices are offered that seek improved risk-adjusted returns by integrating ESG risks (Integrate). Other sustainability indices are designed to generate both financially and socially responsible (Impact) outcomes.

The earliest published sustainability indexes from FTSE/Russell, MSCI, and S&P Dow Jones Indices incorporated environmental, social, and governance factors. The MSCI KLD² 400 Social Index was launched in 1990, the S&P Dow Jones Sustainability Index ("DJSI") in 1999, and the FTSE/Russell FTSE4Good Index in 2001. The first Environmental ("E") index – S&P Global Water – came to market in 2007. The first Social ("S") index – MSCI ex-Controversial Weapons – launched in 2011. Governance ("G") and Environmental & Social ("ES") indexes appeared by 2015.

² KLD – Kinder, Lydenberg, and Domini, co-founders of institutional research firm. Please note that we use the terms "ESG" and "sustainability" interchangeably throughout this paper.

Sustainability indexes – number and types of indices

The number of sustainability indexes has grown exponentially over the past 20 years, from three in 2001, to seven by 2010, to 51 distinct sustainability index series (indices) available by the fourth quarter of 2021 from FTSE/Russell, MSCI and S&PDJI. Figure 1 summarizes the types of ESG indices available as of December 31, 2021.

Total Number of ESG Indices from FTSE/Russell, MSCI, and S&PDJI (4Q2021)					
Type of Index	Year First Index Type Launched	Total 2021 Year-End	FTSE Russell 2021 Year-End	MSCI 2021 Year-End	S&PDJI 2021 Year-End
Total		51	15	17	19
E,S&G	1990	20	6	6	8
E	2007	21	8	6	7
S	2011	6	1	3	2
G	2015	1	-	-	1
E&S	2015	2	-	1	1
S&G	2015	1	-	1	-

FIGURE 1
Total Number of ESG Indices

Source: FTSE/Russell, MSCI, and S&PDJI.

Among ESG indices, environmental indices are the most common with 21 available from these three providers. Each firm offers at least six E indices. E,S&G indices are next most common with 20 available. Each firm also offers at least six E,S&G indices. Today, there are a total of six S indices from these three providers, one G index, two E&S indices, and one Social & Governance ("S&G") index.

Many environmental indices focus on reducing exposure to carbon emissions or to carbon reserves. Some incorporate reduced carbon exposure and higher green revenues. The FTSE Green Revenues indices concentrate on increasing green revenues. The underlying concept is that green revenues are being generated by very large companies that often have wide-ranging product lines in addition to green revenues, including oil and gas companies. For example, Valero, an energy and oil and gas refining company, generated 4.5% of its total revenue from ethanol biofuel in the first quarter of 2021. Some environmental index series capture specific submarkets, such as S&PDJI's Global Water and Global Clean Energy indices.

Primary objectives and construction methods of sustainability indices. Sustainability indices can also be categorized by the primary investor goals they seek to achieve. Sustainability indices encompass a wide range of investor goals. As illustrated in Figure 2, index providers offer indices that: 1) integrate ESG to outperform the financial risk-adjusted return of the parent index (*Integrate*); 2) seek to generate a meaningful and quantifiable, where possible, ESG impact and meet or exceed financial risk-adjusted returns of the parent index (*Impact*); and 3) are designed to align with investor ethical/social values without necessarily generating a market risk-adjusted return comparable to that of the parent index (*SRI*).

Figures 2 and 3 describe these three categories of primary objectives for ESG indices and the general construction approaches used by index providers.

Primary Objectives			
Resulting Financial Expectations	Financially Responsible <i>Integrate</i>	Financially & Socially responsible <i>Impact</i>	Socially Responsible <i>SRI</i>
	Incorporate ESG criteria to enhance long-term return and/or manage financial risk compared to parent index	Seek to generate measurable social or environmental benefits and meet or exceed financial returns of parent index	Align with investor ethical/social/ political values
	Seek higher return gross of fees and/or lower risk than parent index; if optimized, meet parent index return and risk, gross of license fees	Meet or exceed parent index return and risk, gross of fees.	Potential for lower return and/or higher risk than parent index

FIGURE 2
Primary Objectives of ESG Indices

Source: Meketa Investment Group.

As shown in Figure 3, the number of indices designed to Integrate ESG (23) was slightly higher than the number of indices designed as SRI products (17). There were 11 Impact indices. Thus, financial risk/return is considered in 34 of the 51 indices – the Integrate and Impact indices. The majority of ESG indices use an Integrate approach, E indices use predominantly Integrate and Impact, while Social indices predominantly use an SRI approach. The primary objective for each index was determined by the index provider based on Meketa's definitions.

Type of Index	Total	Primary Objective		
		Integrate	Impact	SRI
Total	51	23	11	17
ESG	20	12	-	8
E	21	9	8	4
S	6	-	1	5
G	1	1	-	-
E&S	2	1	1	-
S&G	1	-	1	-

FIGURE 3
Primary Objectives of ESG Indices

Sources: FTSE/Russell, MSCI, & S&P DJI

As summarized in Figure 4, index providers use different approaches to incorporate ESG characteristics. Different construction methods can bring different overall portfolio considerations. For example, they may exclude securities that do not offer specific E, S, and/or G characteristics or select securities that offer specific E, S and/or G characteristics. Both approaches reduce portfolio diversification and give up shareholder voting rights and engagement opportunities for companies that do not fit the ESG characteristics that are being sought. Index providers also reweight the securities in a parent index thereby retaining shareholder voting rights and engagement access and broadly maintaining portfolio diversification, albeit reweighted by ESG factors.

Construction Approach	
ESG Characteristics	
Exclude	<ul style="list-style-type: none"> → Reduce exposure to unwanted ESG characteristics → Give up shareholder voting rights and engagement at companies with ESG concerns → Portfolio diversification reduced in accordance with reduction in number of securities compared to parent index
Select	<ul style="list-style-type: none"> → Retain shareholder rights and engagement on leaders within theme → Give up shareholder voting rights and engagement at all companies outside leaders within ESG theme → Portfolio diversification reduced in accordance with reduction in number of securities compared to parent index
Reweight	<ul style="list-style-type: none"> → Retain shareholder voting rights and engagement, reweighted by ESG priorities → Portfolio diversification reweighted by ESG factor(s)
Matching Parent Index Characteristics	
Optimize	→ Keep tracking error low and meet multiple sustainability objectives
Maintain	→ Match parent index industry, country, and/or size weights

FIGURE 4
ESG Index Construction

Source: Meketa Investment Group.

Some index construction approaches also seek to keep the tracking error to the parent index low and/or maintain the industry, country, and/or size weights of a parent index.

Most indices that Integrate ESG seek to maintain or optimize results compared to the parent index. Eighteen of the 23 Integrate-oriented indices employ either maintain or optimize construction techniques in relation to the parent. The remaining five indices that Integrate ESG combine S or G factors with other financial-oriented metrics to reweight or select stocks. For example, MSCI's Governance Quality Index reweights using G factors and traditional financial quality metrics. S&P Dow Jones Capex and Human Capital index series selects stocks that are proactively making investments in physical and human capital, using the S&P Global Corporate Sustainability Assessment human capital score, capital expenditures ("capex") revenue effect, and capex research and development ("R&D") growth.

Most Impact indices rely on selection to construct the index. Eight of the 11 Impact-oriented indexes are constructed by selecting securities based on sustainability criteria, of which seven rely on selection as the sole construction method. Most of these indices define strong ESG theme-based criteria to build relatively concentrated portfolios, such as MSCI's Global Environment and Women's Leadership indices and FTSE's Environmental Markets and Women on Boards Leadership indices. The S&PDJI Carbon Price Risk Adjusted and Global Carbon Efficient indices both reweight securities, while the S&P Paris Aligned & Climate Transition (PACT) indices exclude securities and then optimize to meet multiple objectives while minimizing tracking error.

SRI-oriented indices are typically constructed by excluding securities that conflict with the social or ethical values being sought. Ten of the 17 SRI-oriented sustainability indexes are constructed using exclusion alone. Three ESG indices that are SRI-oriented use selection as the sole construction approach, such as the S&P Dow Jones Sustainability Index. The remaining four use both exclusion and selection. Ex-fossil fuel and fossil fuel free indices are categorized as SRI indices because the construction approach excludes fossil fuel companies, without explicit financial investment goals.

Appendix I categorizes each of the 51 sustainability equity indices from FTSE/Russell, MSCI and S&PDJI by primary goals and identifies the construction approach. Appendix II includes additional descriptions of each index.

Investment financial performance for sustainability indices

For this report, we investigated the investment, financial and ESG performance of 14 sustainability indexes compared to a parent index. From each index provider, we reviewed an ESG index, an ex-fossil fuel index, a low carbon index, a Climate Transition or Climate Paris Aligned index, and an index focused on social issues as listed in Figure 5. These 14 indexes include a mixture of Integrate (I), Impact (M), and SRI (S) primary goals and various construction methods. The parent indexes are the FTSE Developed, MSCI World and S&P 500®.

Parent Index	FTSE Developed	MSCI World	S&P 500®
ESG Index	4-Good (S)	ESG Leaders (I)	ESG (I)
ex-Fossil Fuel Index	ex-Fossil Fuel (S)	ex-Fossil Fuel (S)	Fossil Fuel Free (S)
Low Carbon Index	Low Carbon Select (I)	Low Carbon Target (I)	Global Carbon Efficient (M)
Climate Index	TPI Climate Transition (I)	Climate Paris Aligned (I)	Net Zero 2050 Paris Aligned ESG (M)
Social Index	-	Women's Leadership (M)	E&S Responsible (I)

FIGURE 5
Fourteen Sample Sustainability Indices
Sources: FTSE/Russell, MSCI, S&PDJI.

Please note that index providers offer similarly named indexes using different data sources and definitions. For example, The FTSE ex-Fossil Fuel indices exclude companies that own proved or probable reserves in coal, oil, or gas. The MSCI ex-Fossil Fuel Indices exclude companies that have proved and probable coal reserves and/or oil and natural gas reserves used for energy purposes. The S&P 500® Fossil Fuel Free Index excludes companies that own proven or probable fossil fuel reserves with greater than 50% recovery probability. Summary descriptions of all 51 indices may be found in Appendix II.

In this section, we review the annualized return, risk (standard deviation), Sharpe ratio, and tracking error compared to the parent index for the trailing one, three- and five-year periods ending December 31, 2021 as summarized in Figure 6 (FTSE), Figure 7 (MSCI) and Figure 8 (S&PDJI). We note that the financial performance history reviewed here is limited and includes a period of significant economic and market upheaval due to Covid-19 in US and global markets.

The ex-fossil fuel indexes from all three index providers outperformed their respective parent indexes during the three- and five-year trailing periods, as measured by

higher annualized returns and higher Sharpe ratios. For each provider's ex-fossil fuel index, the five-year tracking error to their respective parent index was below 0.8% per annum. These ex-fossil fuel indexes provide examples of SRI indexes (indexes constructed without any explicit goal to meet or exceed market investment investment financial returns) that during these time periods did outperform their parent index returns.

Among the four FTSE Developed ESG indexes reviewed, the returns were in-line with or above that of the parent index, with the FTSE 4Good Index performing the best during the periods reviewed, as shown in Figure 6. The FTSE Developed 4Good Index included less than half of the constituents of the parent FTSE Developed Index (1,058:2,211). Among the four FTSE Developed Sustainability indexes reviewed here, this index held the least number of constituents and second highest five-year tracking error after the Low Carbon Emissions Select Index.

Name of Index (Primary Goal I, M, S)	No. of Firms	Weighted Avg Mkt Cap (\$B)	Gross Return			Risk (Std Deviation)			Sharpe Ratio			Tracking Error
			1-Yr (%)	3-Yr (%)	5-Yr (%)	1-Yr (%)	3-Yr (%)	5-Yr (%)	1-Yr (%)	3-Yr (%)	5-Yr (%)	5-Yr (%)
FTSE Developed	2,211	397.2	21.4	21.9	15.5	10.8	18.3	15.4	1.98	1.20	1.00	-
4Good (S)	1,058	498.8	23.6	22.8	16.1	10.9	18.4	15.5	2.17	1.24	1.04	1.51
ex-Fossil Fuels (S)	2,117	411.8	21.0	22.9	16.2	10.9	18.2	15.4	1.94	1.26	1.05	0.76
Low Carbon Emissions Select (I)	2,105	410.0	22.6	22.4	16.0	10.5	18.5	15.6	2.16	1.21	1.02	1.63
TPI Climate Transition (I)	2,052	403.7	23.5	22.4	15.5	10.6	18.4	15.5	2.23	1.22	1.00	1.38

FIGURE 6
Sample ESG Indexes - FTSE
Annualized Risk-Return
Statistics (Periods Ending
December 31, 2021)

Source: FTSE/Russell. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index

Among the five MSCI World ESG indexes reviewed, the Climate Paris Aligned Index generated the highest returns and highest Sharpe ratios over the trailing three- and five-year periods, while the ESG Leaders Index led in these two metrics over the trailing one-year period as shown in Figure 7. The MSCI World Climate Paris Aligned index was comprised of 655 from the 1,546 constituents of the MSCI World (42%). The MSCI World ESG Leaders index included 712 of the 1,546 (46%) MSCI World constituents.

Name of Index (Primary Goal I, M, S)	No. of Firms	Weighted Avg Mkt Cap (\$B)	Gross Return			Risk (Std Deviation)			Sharpe Ratio			Tracking Error
			1-Yr (%)	3-Yr (%)	5-Yr (%)	1-Yr (%)	3-Yr (%)	5-Yr (%)	1-Yr (%)	3-Yr (%)	5-Yr (%)	5-Yr (%)
MSCI World	1,546	418.8	22.3	22.3	15.6	10.0	17.3	15.0	2.07	1.20	0.96	-
ESG Leaders (I)	712	368.6	25.3	23.2	16.1	11.2	16.8	14.7	2.08	1.27	1.01	1.52
ex-Fossil Fuels (S)	1,469	433.5	21.9	23.3	16.4	10.2	17.0	14.8	2.00	1.26	1.02	0.71
Low Carbon Target (I)	1,267	393.3	22.1	22.7	15.8	10.1	17.4	15.1	2.02	1.21	0.97	0.32
Climate Paris Aligned (I)	655	364.8	22.4	23.7	17.0	10.4	17.1	14.8	2.00	1.28	1.05	1.18
Women's Leadership (M)	629	65.1	18.3	19.2	13.6	10.1	19.5	16.5	1.71	0.95	0.78	3.10

FIGURE 7
Sample ESG Indexes - MSCI
Annualized Risk-Return
Statistics (Periods Ending
December 31, 2021)

Source: MSCI. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index.

For the five S&P 500® ESG indexes, all except the Carbon Efficient Index generated returns, risk, and Sharpe ratios for each trailing period that were relatively in-line with each other and outperformed the S&P 500® parent index as shown in Figure 8. The S&P 500® ESG Index generated the best performance for the one-year period and the S&P 500® Net Zero 2050 Paris-Aligned ESG Index led over the three- and five-year periods, as measured by annualized returns and Sharpe ratios. Of the 505 constituents in the parent index, the S&P 500® ESG and Net Zero 2050 indexes respectively held 310 and 279 holdings.

Name of Index (Primary Goal I, M, S)	No. of Firms	Weighted Avg Mkt Cap (\$B)	Gross Return			Risk (Std Deviation)			Sharpe Ratio			Tracking Error
			1-Yr (%)	3-Yr (%)	5-Yr (%)	1-Yr (%)	3-Yr (%)	5-Yr (%)	1-Yr (%)	3-Yr (%)	5-Yr (%)	5-Yr (%)
S&P 500®	505	597.8	28.7	26.1	18.5	11.0	17.4	15.4	2.60	1.50	1.20	-
ESG (I)	310	543.6	31.8	28.2	19.7	11.7	17.3	15.3	2.73	1.63	1.28	1.25
Fossil Fuel Free (S)	489	607.8	28.4	26.8	19.2	11.4	17.2	15.3	2.49	1.56	1.26	0.66
Carbon Efficient (M)	490	653.4	28.8	26.2	18.5	11.4	17.6	15.5	2.53	1.49	1.19	0.59
Net Zero 2050 Paris Aligned ESG Index (M)	279	483.2	31.6	29.2	20.9	12.1	17.4	15.5	2.60	1.68	1.35	1.42
E&S Responsible (I)	290	747.9	29.9	27.7	19.8	11.3	17.1	15.2	2.65	1.62	1.30	1.41

FIGURE 8
Sample ESG Indexes - S&PDJI Annualized Risk-Return Statistics (Periods Ending December 31, 2021)

Source: S&PDJI. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index.

E, S, and G KPIs for sample sustainability indexes

This section explores E, S, and G metrics using Institutional Shareholder Services ("ISS")³ ESG and Sustainable Development Goals ("SDG")⁴ data for each of the 14 sustainability indices discussed in the previous section and compares them to their respective parent indices. We note that each index provider uses different ESG metrics and different sources than ISS to construct their ESG indices. FTSE/Russell builds its ESG indices using data from FTSE/Russell, Sustainalytics, and TPI. MSCI is the primary/sole ESG and climate data provider for constructing MSCI ESG and climate indexes. The S&PDJI leverages primary in-house data sources including S&P Global Trucost for climate data and the S&P Global Corporate Sustainability Assessment to build core ESG indices similar to MSCI.

Description of E, S, and G KPIs

To provide some perspective on these 14 sustainability indices using E, S, and G KPIs, we selected a few environmental, social and governance metrics. As briefly described in Appendix III, the environmental factors encompass measures of carbon emissions, green revenue share, climate risk disclosure and targets. These metrics are supplemented by an

³ Data provider for ESG and SDG data.

⁴ See Appendix IV. Released by UN General Assembly for betterment of humanity.

exploration of the exposure to fossil fuel reserve owners, thermal coal revenue, and revenue from fossil fuel.

The social factors include measures of racial and gender diversity on corporate boards. An additional table identifies the top five companies within each index that had UN Global Compact verified violations. Each of these data points and their specific measurements can be approached in different ways. As one example, many providers exclude based on United Nations Global Compact (“UNGC”) data, and many providers may disagree on the use of UNGC as a factor.

The tables below present these E, S, and G KPIs for the 14 sustainability indexes reviewed here.

FTSE Developed E, S, and G KPIs

As shown in Figure 9, the FTSE Developed 4 Good, ex-Fossil Fuel, Low Carbon and TPI Climate Transition indexes each showed better environmental KPIs than the FTSE Developed Index, including weighted average carbon emissions, percent of assets allocated to companies that report at least Scope 1 and Scope 2 greenhouse gas emissions to the Climate Disclosure Project (“CDP”), and the percent of assets of companies that have Science Based Targets for emissions reductions.

E, S, and G KPI	FTSE Dvd	FTSE Dvd 4 Good	FTSE Dvd ex-Fossil Fuel	FTSE Dvd Low Carbon	FTSE Dvd TPI Climate Transition
No. of Constituents	2,211	1,058	2,117	2,105	2,052
Environment					
Weighted Avg. Carbon Emissions Intensity	129.1	101.7	101.5	61.8	66.1
Weighted Avg. Green Revenue Share	9.7%	9.6%	9.9%	9.9%	9.2%
Disclosure- CDP Reporting (% Assets)	75.5%	91.8%	76.8%	90.2%	88.7%
Science Based Targets (% Assets)	31.4%	38.1%	32.7%	49.0%	41.2%
Social					
% Women on Board (DB)	31.6%	33.1%	31.6%	34.6%	33.5%
% Ethnic Diversity on Board	69.3%	64.8%	69.6%	69.3%	70.5%
Governance					
Companies w/ Different Voting Share Classes (% Assets)	14.0%	13.9%	13.3%	10.9%	12.0%
Weighted. Avg. % Independent Board (%)	75.2%	76.0%	75.5%	78.1%	76.6%
1+ Financial Expert on Audit Committee (% of Assets)	89.5%	89.1%	89.4%	91.1%	89.6%

FIGURE 9
FTSE Developed ESG Sample Indexes – E, S, and G KPIs

Sources: FTSE/Russell; ISS ESG and SDG Data. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index.

The social indicators for the FTSE Developed ESG indexes reviewed here, as measured by the percent of women on boards and the percent of assets of companies with ethnic diversity on their board, generated results that closely aligned with that of the FTSE Developed parent index. These metrics offer very broad indicators regarding gender and ethnic diversity. More detailed analyses of board, executive and overall staff diversity may generate greater distinctions between the ESG indexes and the parent index.

The metrics for the governance KPIs indicated that the four ESG FTSE Developed indexes all generated roughly similar results but performed modestly better than the FTSE Developed parent index for the weighted average percent of board members that are independent. All four indexes also showed a lower percent of assets with different voting class shares than the parent FTSE Developed index. The 4Good and ex-Fossil Fuel indexes showed a slightly lower percent of assets allocated to companies that had at least one financial expert on their audit committee.

Figure 10 highlights the fossil fuel exposure of the four FTSE Developed ESG indexes reviewed here. Each ESG index showed a lower percent exposure to fossil fuel reserve owners and a lower exposure to companies with greater than 50% of revenues from fossil fuels (energy and extractives) than the parent FTSE Developed index. The percent of assets from companies with greater than 20% thermal coal revenues was less than 0.1% in the FTSE Developed parent index, representing two of the total 2,211 companies. Not surprisingly, each FTSE Developed ESG index registered zero revenues from companies with greater than 20% thermal coal revenues.

Index	# of Constituents	Fossil Fuel Reserves Owners	>20% Thermal Coal Revenue	> 50% Fossil Fuel Revenue
FTSE Developed: % of Assets		4.7%	0.01%	4.2%
FTSE Developed: # of Companies	2,211	86	2	106
FTSE Developed 4 Good: % of Assets	1,058	3.3%	0.00%	2.8%
FTSE Developed ex-Fossil Fuel: % of Assets	2,117	0.4%	0.00%	1.7%
FTSE Developed Low Carbon: % of Assets	2,105	2.3%	0.00%	1.2%
FTSE Developed TPI Climate Transition: % of Assets	2,052	1.8%	0.00%	1.6%

FIGURE 10
FTSE Developed ESG
Sample Indexes – Fossil Fuel
Exposure

Sources: FTSE/Russell; ISS ESG and SDG Data. Green highlight indicates outperformance of parent index.

The number of violations of the UN Global Compact Ten Principles provides an additional indication of the social responsibility of the companies in a portfolio. To provide some additional perspective on the differences between the FTSE Developed ESG indexes reviewed and the parent FTSE Developed index, we identified the five companies in the FTSE Developed Index with the highest number of UN Global Compact violations. In Figure 11, we show the weight of each company in the FTSE Developed Index and in each ESG index. As illustrated, the FTSE Developed 4 Good Index had no exposure to four of the top five UN Global Compact violators and slightly increased exposure to one of the five companies. In contrast, the FTSE Developed ex-Fossil Fuel and TPI indexes showed a slightly higher relative exposure to four of the five companies than the FTSE Developed parent index. The Low Carbon index held lower or zero weights in the top five companies with the highest number of UN Global Compact violations.

Name of Company	Fresenius Medical	Airbus SE	Alphabet Inc.	Porsche Automobil	LM Ericsson
Number of Violations	8	7	5	4	4
Weight – Parent	0.047%	0.112%	2.642%	0.023%	0.053%
Weight – 4Good	-	-	4.295%	-	-
Weight – ex-FF	0.049%	0.118%	2.784%	0.024%	0.001%
Weight – Low Carbon	-	-	1.280%	-	0.239%
Weight – TPI	-	0.144%	3.232%	0.150%	0.057%
Principle Violated Most, No. of Times Violated	Principle 10 – Corruption, 8x	Principle 10 – Corruption, 7x	Principle 10 – Corruption, 4x	Principles 7-9 – Environment, 3x	Principle 10 – Corruption, 4x
GICS Sector	Health Care	Industrials	Communication Services	Consumer Discretionary	Information Technology

Broadly, we find that for the FTSE Developed ESG indexes reviewed here each index generates E, S and/or G metrics that are generally better than the parent index.

MSCI World E, S, and G KPIs

Figure 12 summarizes E, S, and G KPIs for the five MSCI World ESG indexes reviewed.

E, S, and G KPI	MSCI World	MSCI World ESG Leaders	MSCI World ex-Fossil Fuel	MSCI World Low Carbon Target	MSCI World Climate Paris Aligned	MSCI World Women's Leadership
No. of Constituents	1,546	712	1,469	1,267	655	629
Environment						
Weighted Avg. Carbon Emissions Intensity	130.3	70.4	100.2	58.4	27.9	129.1
Weighted Avg. Green Revenue Share	9.8%	12.2%	10.1%	9.6%	14.6%	8.9%
Disclosure- CDP Reporting (% Assets)	74.3%	81.0%	75.8%	75.1%	76.3%	67.5%
Science Based Targets (% Assets)	34.0%	41.9%	35.3%	34.6%	36.4%	26.6%
Social						
% Women on Board (DB)	31.6%	31.6%	31.7%	31.5%	31.9%	37.4%
% Ethnic Diversity on Board	66.6%	65.1%	67.6%	66.6%	63.3%	51.5%
Governance						
Companies w/ Different Voting Share Classes (% Assets)	12.6%	10.4%	12.0%	12.3%	14.2%	13.6%
Weighted. Avg. % Independent Board (%)	75.3%	76.0%	75.7%	75.0%	73.9%	72.6%
1+ Financial Expert on Audit Committee (% of Assets)	88.4%	87.3%	88.6%	87.9%	87.1%	85.7%

FIGURE 11
FTSE Developed ESG Sample Indexes – Five Companies with Highest Number of UN Global Compact Violations

Sources: FTSE/Russell; ISS ESG and SDG Data. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index.

FIGURE 12
MSCI World Sample ESG Indexes – E, S and G Key Performance Indicators Data as of December 31, 2021

Sources: MSCI; ISS ESG and SDG Data. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index.

Regarding environmental KPIs, the MSCI World Climate Paris Aligned Index most significantly outperformed the parent MSCI World in both Weighted Average Carbon Emissions Intensity and Weighted Average Green Revenue Share. The MSCI World ESG Leaders Index included the highest percentage of CDP disclosure and percent of assets that had Science Based Targets for reducing emissions.

Like the results for the FTSE Developed ESG indexes, the board gender and ethnic diversity metrics shown here for the five MSCI ESG indexes generally produced results closely aligned to those for the MSCI World parent index. One exception was the MSCI World Women's Leadership Index, which showed higher board gender diversity but markedly lower board ethnic diversity than the parent MSCI World index, reflecting distinctions within the MSCI World index universe between gender and ethnic board diversity.

The governance KPIs for the five MSCI World ESG indexes reviewed were similar to those of the MSCI World Index with some marginally better and some marginally worse than the MSCI World parent index.

Regarding the fossil fuel exposure of the five sample MSCI World ESG indexes, as shown in Figure 13, all five ESG indexes exhibited a lower percent exposure to fossil fuel reserve owners, to companies with greater than 20% thermal coal revenues, and to companies with greater than 50% revenues from fossil fuels. The MSCI Climate Paris Aligned Index exhibited the lowest fossil fuel exposure among these five MSCI World ESG indexes. The MSCI Climate Paris Aligned Index held 655 of the 1,546 constituents in the MSCI World universe, compared to the 629 constituents in the MSCI Women's Leadership Index, 712 constituents in the MSCI World ESG Leaders Index, and respectively 1,267 and 1,469 constituents in the MSCI World Low Carbon Target and ex-Fossil Fuel indexes.

Index	# of Constituents	Fossil Fuel Reserves Owners	>20% Thermal Coal Revenue	> 50% Fossil Fuel Revenue
MSCI World: % of Assets		4.4%	0.03%	4.1%
MSCI World: # of Companies	1,546	64	1	85
MSCI ESG Leaders: % of Assets	712	1.4%	0.00%	2.2%
MSCI ex-Fossil Fuels: % of Assets	1,469	0.5%	0.00%	1.4%
MSCI Low Carbon Target: % of Assets	1,267	2.1%	0.00%	2.6%
MSCI Climate Paris Aligned: % of Assets	655	0.4%	0.00%	0.0%
MSCI Women's Leadership: % of Assets	629	2.7%	0.00%	3.7%

FIGURE 13
MSCI World Sample ESG Indexes – Fossil Fuel Exposure

Sources: MSCI; ISS ESG and SDG Data. Green highlight indicates outperformance of parent index.

Figure 14 illustrates the weight of the five companies in the MSCI World with the highest number of UN Global Compact violations and their corresponding weight in each ESG index. As illustrated, the MSCI World Women's Leadership Index had exposure to only one of the top five UN Global Compact violators in the MSCI World Index, albeit at a relatively higher weight than the parent index. In contrast, the MSCI World ex-Fossil Fuel Index includes all five companies and had a slightly higher exposure to all of them than the MSCI World Index. The Low Carbon index held lower or zero weight in a few of the top five companies with violations, but a slightly increased weight in two of the top five companies with the highest number of UN Global Compact violations. The MSCI World Climate Paris Aligned Index had exposure to two of the top five companies with UN Global Compact violations with one weighted slightly above and the other weighted slightly below the parent index. The MSCI World ESG Leaders Index had exposure to two of the top five companies with UN Global Compact violations with one of the two being substantially overweight.

Name of Company	Fresenius Medical	Airbus SE	Alphabet Inc.	Porsche Automobil	LM Ericsson
Number of Violations	8	7	5	4	4
Weight - Parent	0.048%	0.121%	2.735%	0.023%	0.052%
Weight - ESG Leaders	-	-	5.397%	-	0.102%
Weight - ex-FF	0.051%	0.127%	2.874%	0.025%	0.054%
Weight - Low Carbon	0.027%	0.130%	2.741%	0.003%	0.049%
Weight - Climate Paris	-	-	2.702%	-	0.093%
Weight - Women's	0.173%	-	-	-	-
Principle Violated Most, No. of Times Violated	Principle 10 – Corruption, 8x	Principle 10 – Corruption, 7x	Principle 10 – Corruption, 4x	Principles 7-9 – Environment, 3x	Principle 10 – Corruption, 4x
GICS Sector	Health Care	Industrials	Communication Services	Consumer Discretionary	Information Technology

FIGURE 14
MSCI World Sample ESG Indexes – Five Companies with the Highest Number of UN Global Compact Violations

Sources: MSCI – and ISS ESG and SDG Data. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index.

Broadly, we find for the MSCI World ESG indexes reviewed here that each index generates E, S, and/or G metrics that outperform the parent index.

S&P 500® E, S and G KPIs

Figure 15 summarizes the high-level E, S, and G KPIs for the five S&P 500® ESG indexes reviewed. Regarding environmental KPIs, all five S&P 500® ESG indexes outperformed the S&P 500® parent index in weighted average carbon emissions intensity and CDP disclosure. The S&P 500® ESG indexes illustrate how timing differences in adding or removing specific companies from the parent index can have material near-term impacts on how ESG sub-indexes compare to the parent index.

In December 2020, results for the Weighted Average Green Revenue Share of the ESG indexes underperformed the S&P 500® parent index due to the addition of Tesla (TSLA) in December 2020 to the parent index. Tesla was added to the ESG indexes reviewed here after December 2020, in accordance with each index's annual reconstitution. The S&P 500® E&S Responsible Index is the only one of the five ESG indexes reviewed here that did not add TSLA after it had been added to the S&P 500®. By December 31, 2021, when the four ESG indexes that added TSLA as a constituent had completed this addition, they each outperformed the parent index on Weighted Average Green Revenue Share. Generally, the S&P 500® ESG indexes reviewed here registered social and governance KPI results largely in-line with the S&P 500® parent index with some results slightly underperforming and some slightly outperforming the parent index, using the S and G metrics identified for this report.

E, S, and G KPI	S&P 500®	S&P 500® ESG	S&P 500® E&S Responsible	S&P 500® Fossil Fuel Free	S&P 500® Carbon Efficient	S&P 500® Net Zero Paris Aligned ESG
No. of Constituents	505	310	290	489	490	279
Environment						
Weighted Avg. Carbon Emissions Intensity	127.2	95.0	116.1	115.9	97.1	14.0
Weighted Avg. Green Revenue Share	11.3%	13.1%	10.5%	11.5%	11.5%	11.9%
Disclosure- CDP Reporting (% Assets)	75.5%	82.9%	85.8%	76.6%	77.1%	84.7%
Science Based Targets (% Assets)	33.6%	37.4%	42.3%	34.3%	34.4%	31.4%
Social						
% Women on Board (DB)	32.1%	32.5%	33.3%	32.1%	32.0%	31.0%
% Ethnic Diversity on Board	97.2%	97.1%	96.9%	97.3%	97.4%	95.6%
Governance						
Companies w/ Different Voting Share Classes (% Assets)	9.9%	7.8%	10.7%	10.1%	9.7%	11.7%
Weighted. Avg. % Independent Board (%)	83.2%	83.9%	84.2%	83.2%	83.5%	81.9%
1+ Financial Expert on Audit Committee (% of Assets)	97.7%	97.1%	97.0%	97.6%	97.8%	95.5%

FIGURE 15
E, S, and G KPIs for S&P 500 Select Sustainability Indexes as of December 31, 2021.

Sources: S&P DJI, ISS ESG and SDG Data. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index.

As shown in Figure 16, The S&P 500® Index included no constituents with greater than 20% in revenues from thermal coal as of December 31, 2021, and thus, each of the five ESG indexes reviewed here held no exposure to such companies. All five of the S&P 500® ESG indexes registered lower exposure to fossil fuel reserve owners and to companies with greater than 50% revenues from fossil fuels with the S&P 500® Net Zero Paris Aligned Index showing the lowest exposure to fossil fuel reserve owners and companies with greater than 50% revenues from fossil fuels.

Index	# of Constituents	Fossil Fuel Reserves Owners	>20% Thermal Coal Revenue	> 50% Fossil Fuel Revenue
S&P 500®: % of assets		3.8%	0.00%	3.7%
S&P 500®: # of Companies	505	17	0	35
S&P 500® ESG: % Assets	310	2.7%	0.00%	2.9%
S&P 500® E&S Responsible: % Assets	290	0.6%	0.00%	1.9%
S&P 500® Fossil Fuel Free: % Assets	489	1.8%	0.00%	1.7%
S&P 500® Carbon Efficient: % Assets	490	3.2%	0.00%	2.7%
S&P Net Zero Paris Aligned ESG: % Assets	279	0.1%	0.00%	0.0%

FIGURE 16
S&P 500® Sample ESG Indexes: Fossil Fuel Exposure

Sources: S&PDJI and ISS ESG and SDG Data. Green highlight indicates outperformance of parent index.

As shown in Figure 17, the five constituents of the S&P 500® Index with the highest number of UN Global Compact violations include four leading IT/communication services companies (Alphabet, Amazon, Apple, and Meta/Facebook) and Philip Morris. The S&P 500® Net Zero Paris Aligned ESG Index had lower or no exposure to four of these companies; however, it had nearly twice the exposure to Alphabet. Both the S&P 500® ESG Leaders and E&S Responsible indexes have zero exposure to Phillip Morris but higher exposure to three of the four IT companies. The S&P 500® Fossil Fuel Free and Carbon Efficient indexes each registered only slight variations in holdings of these five securities as compared to the parent S&P 500® index.

Name of Company	Alphabet Inc.	Amazon.com, Inc.	Apple Inc.	Meta Platforms, Inc.	Philip Morris
Number of Violations	5	2	2	2	2
Weight – Parent	4.164%	3.604%	6.858%	1.972%	0.366%
Weight – ESG Leaders	5.450%	4.716%	8.975%	-	-
Weight – E&S Responsible	5.681%	4.916%	9.356%	2.690%	-
Weight – FFF	4.259%	3.685%	7.013%	2.017%	0.375%
Weight – Carbon Efficient	3.855%	3.921%	7.796%	1.959%	0.393%
Weight – Paris Aligned	8.096%	-	6.723%	1.853%	-
Principle Violated Most, No. of Times Violated	Principle 10 – Corruption, 3x	Principle 10 – Corruption, 2x	Principle 1 – Human Rights; Principle 10 – Corruption	Principle 1 – Human Rights, 2x	Principle 10 – Corruption, 2x
GICS Sector	Communication Services	Consumer Discretionary	Information Technology	Communication Services	Consumer Staples

FIGURE 17
S&P 500® Sample ESG Indexes: Five Companies With Highest Number of UN Global Compact Violations

Sources: S&PDJI and ISS ESG and SDG Data. Green highlight indicates outperformance of parent index; yellow highlight marks underperformance of parent index; no highlight indicates results equal parent index.

In keeping with the findings for the FTSE Developed and MSCI World indexes reviewed previously, we find for the S&P 500® ESG indexes that generally each index generates E, S, and/or G metrics that outperform the parent index.

Conclusion

The widening range of sustainability index families present new possibilities for passive equity investing and for benchmarking active equity portfolios. Going forward, we anticipate both continued refinement of existing sustainability index approaches and the introduction of new indices.

ESG indices that are designed to integrate ESG metrics to enhance returns and/or lower risk of the parent index that we reviewed did not always achieve that goal during the 5-year period reviewed. We believe these results generally reflect natural market movements. Depending on the ESG index construction method, an ESG index may use long-term factors that move in and out of favor over short-term market cycles, similar to many traditional factors (e.g., value or growth indices).

Consideration of any specific sustainability index, either for a core equity portfolio, a satellite equity investment fund, or as a benchmark for an actively managed equity fund, should include a careful review of the primary investment goals of the index; analysis of how the index construction is expected to effect risk, return, diversification, shareholder voting and engagement, and ESG exposure on the issues of concern; and index license fees.

Appendix I: ESG index primary objective and construction approach

Index ESG Category and Index Name	Index Construction Approach	Index Primary Objective		
		Integrate	Impact	SRI
FTSE/Russell, MSCI and S&PDJI	51	23	11	17
FTSE/Russell	15	9	3	3
ESG-Blossom Japan	Exclude, Select	X		
ESG-Russell ESG	Reweight, Maintain	X		
ESG-Global ESG	Reweight, Maintain	X		
ESG-ESG Low Carbon Select	Reweight, Maintain	X		
E-EPRA NAREIT Green	Reweight, Maintain	X		
E-Global Climate	Reweight, Maintain	X		
E-Smart Sustainability	Reweight, Maintain	X		
E-TPI* Climate Transition	Reweight, Maintain	X		
E-Paris Aligned	Reweight, Maintain	X		
E-Divest Invest	Exclude, Select, Reweight		X	
E-Environmental Markets	Select		X	
S-Women on Boards Leadership	Select		X	
ESG-FTSE4Good	Exclude, Select			X
ESG-Global Choice	Exclude, Select			X
E-ex-Fossil Fuel	Exclude			X

FIGURE 18
FTSE/Russell ESG Index
Primary Objective and
Construction Approach

Source: FTSE/Russell, MSCI, and S&PDJI.

*TPI – Transition Pathway Initiative

Index ESG Category and Index Name	Index Construction Approach	Index Primary Objective		
		Integrate	Impact	SRI
MSCI	17	7	3	7
ESG-ESG Leaders	Exclude, Select, Maintain	X		
ESG-ESG Focus	Exclude, Reweight, Optimize	X		
ESG-ESG Universal	Exclude, Reweight, Maintain	X		
E-Low Carbon Target	Reweight, Optimize	X		
E-Low Carbon Leaders	Exclude, Reweight, Optimize	X		
E-Climate Change	Exclude, Reweight, Maintain	X		
E-Climate Paris Aligned	Exclude, Reweight, Optimize	X		
ES-Sustainable Impact	Select		X	
E-Global Environment	Select		X	
SG-Women's Leadership	Select		X	
ESG-SRI*	Exclude, Select, Maintain			X
ESG-KLD 400 Social	Exclude, Select, Maintain			X
ESG-ESG Screened	Exclude			X
E-ex-Fossil Fuel	Exclude			X
S-ex-Controversial Weapons	Exclude			X
S-ex-Tobacco Involvement	Exclude			X
S-Faith Based	Exclude			X

FIGURE 19
MSCI ESG Index Primary
Objective and Construction
Approach

Source: FTSE/Russell, MSCI, and S&PDJI.

*SRI – Socially Responsible Investing

Index ESG Category and Index Name	Index Construction Approach	Index Primary Objective		
		Integrate	Impact	SRI
S&P Dow Jones Indices	19	7	5	7
ESG-Dow Jones Select ESG RE Securities	Exclude, Reweight	X		
ESG-S&P ESG Elite	Exclude, Select, Maintain	X		
ESG-S&P ESG	Exclude, Select, Maintain	X		
ESG-S&P Select Equal Weight ESG	Select, Reweight	X		
ES-S&P International Environmental & Socially Responsible	Exclude, Reweight, Optimize	X		
ESG-Dow Jones Sustainability Diversified	Exclude, Select, Maintain	X		
G-S&P/Drucker Institute Corporate Effectiveness	Select	X		
E-S&P Carbon Price Risk Adjusted	Reweight		X	
E-S&P Global Carbon Efficient	Reweight		X	
E-S&P Paris Aligned & Climate Transition (PACT)	Exclude, Optimize		X	
E-S&P Global Clean Energy	Select		X	
E-S&P Global Water	Select		X	
ESG-Dow Jones Sustainability	Select			X
ESG-S&P ESG Exclusion	Exclude			X
ESG-S&P Sustainability Screened	Exclude			X
E-S&P Fossil Fuel Free	Exclude			X
E-S&P/TSX* Renewable Energy and Clean Technology	Select			X
S-JPX*/S&P CAPEX & Human Capital	Select			X
S-S&P Catholic Values	Exclude			X

FIGURE 20
S&P Dow Jones ESG Index
Primary Objective and
Construction Approach

Source: FTSE/Russell, MSCI, and S&PDJI.

*TSX – Toronto Stock Exchange

*JPX – Japan Exchange Group

Appendix II: summary descriptions of ESG indices

This appendix provides summary descriptions of the indexes provided by FTSE/Russell, MSCI, and S&P Dow Jones Indices (S&PDJI). The indexes are grouped by index provider, alphabetically – FTSE/Russell, MSCI, and S&PDJI. Within each set of index provider's information, their ESG indexes are grouped into three categories that highlight the broad primary objective for using ESG information to construct the index. These include:

- **Integrate** – integrate ESG factors to enhance return, and/or manage ESG financial risk
- **Impact** – generate measurable social or environmental benefits and market or better financial returns
- **SRI** – align with investor ethical/social/political values

The information for each index includes the index's E, S, and G segment; name; year launched; summary description; and summary construction approach.

FTSE/Russell Indexes - Integrate

ESG - Blossom Japan, 2017 The FTSE Blossom Japan Index is designed to provide market participants with a tool to identify and measure the performance of Japanese companies that demonstrate strong ESG practices. The index is constructed to be industry neutral compared with the Japanese equity market represented by the FTSE All Cap Japan index. Approach: select, optimize.

ESG - ESG, 2017 The FTSE ESG index series is designed to help investors align investment and ESG objectives in a broad benchmark whilst maintaining industry neutrality. Company weights are "tilted" using FTSE/Russell's ESG ratings. Subsequently, industry neutral re-weighting is applied so that the industry weights in each index match the underlying index universe. As a result, each FTSE ESG index is expected to have risk/return characteristics that are similar to the underlying universe, with the added benefit of improved ESG metrics. Companies are reweighted by ESG, maintaining industry and country weights of parent index. Approach: reweight, maintain.

ESG - UK 100 ESG Select, 2018 The FTSE UK 100 ESG Select Index is designed to measure the performance of the top 100 companies, as demonstrated by their ESG practices, within the FTSE All Share Index. This index uses the overall rating from FTSE Russell's ESG ratings and data model to select companies for inclusion. Companies are weighted by investable market capitalization. Approach: reweight, maintain.

E - Green Revenues, 2016 The FTSE Green Revenues index series is designed to obtain increased exposure to companies engaged in the transition to a green economy based on FTSE/Russell's Green Revenues data model. All constituents of the parent index are included. Constituent weights (where applicable) are based on each constituent's Low Carbon Economy Industrial Indicator ("LOWCII") factor. A company's LOWCII factor is defined as the ratio of revenues as classified by the Low Carbon Economy Industrial Classification System ("LCEICS") to total revenues. Approach: reweight by ESG, maintain industry and country weights of parent index.

E - EPRA NAREIT Green, 2018 The FTSE EPRA NAREIT Green indexes provide investors with a useful tool for integrating climate risk into their listed real estate portfolio. These indexes provide a sustainability focused extension to the FTSE EPRA NAREIT Global Real Estate index series, the world's leading series of listed real estate benchmarks. The FTSE EPRA NAREIT Green indexes weight constituents based on two sustainable

investment measures, green building certification and energy usage, and follow the FTSE Global Factor index series methodology to address concerns about liquidity, capacity, diversification and turnover. Approach: reweight, maintain.

E - Global Climate, 2017 The FTSE Climate index series is designed to hedge climate risks and gain exposure to upsides that climate change may bring to companies. This index series considers green revenues alongside carbon emissions and fossil fuel reserves. The index series methodology is designed to reflect the performance of a global and diversified basket of securities where their weights are varied to account for risks and opportunities associated with climate change. Approach: reweight by E, maintain industry and country weights of parent index.

E - Low Carbon Select, 2019 The FTSE Developed ESG Low Carbon Select index series is comprised of mid and large cap stocks from developed markets and targets 50% reduction in index level carbon emissions, 50% reduction in fossil fuel reserves and 20% improvement in index level ESG ratings. The index is constructed using the FTSE Russell Target Exposure methodology. The index series also excludes companies involved with controversial product activities - weapons, thermal coal, tobacco, nuclear power, gambling, adult entertainment, and companies involved with controversies related to the UN Global Compact principles. Approach: exclude, select.

E - TPI Climate Transition, 2020 The FTSE Developed ex Korea TPI Climate Transition Index is designed to reflect the performance of a global and diversified basket of securities where constituent weights vary to account for risks and opportunities associated with the transition to a low carbon economy. Constituent weights are based on five key climate considerations: company exposure to green revenues, fossil fuel reserves and carbon emissions; companies' climate governance activities (aligned with the Taskforce on Climate-related Financial Disclosures' recommendations); and forward-looking commitments to carbon emission pathways (aligned to the Paris Agreement and 2DC/1.5DC warming scenarios). The index combines data and analysis from FTSE Russell and the Transition Pathway Initiative (TPI). Companies involved in controversial weapons are excluded. Approach: reweight by E, maintain industry and country weights of parent index.

E - Smart Sustainability, 2016 The FTSE Smart Sustainability index series is the combination of sustainability parameters and risk premia via factor exposure within a single index solution. It reflects the growing demand for the incorporation of both factors and ESG data into investment tools, including indexes. The Smart Sustainability index family reflects the performance of stocks with the application of a range of factor and sustainability adjustments. This index family achieves the desired exposures by combining factor characteristics such as value, quality, low volatility and size with sustainability parameters such as ESG practices and climate change.

FTSE/Russell Indexes - Impact

E - FTSE Divest-Invest, 2016 The FTSE Divest-Invest Index series is designed to incorporate a combination of rules-based strategies to reduce exposure to companies from certain Industrial Classification Benchmark ("ICB") subsectors associated with a high carbon economy and obtain increased exposure to companies engaged in the transition to a low carbon economy. Securities in the following sectors and subsectors of the ICB system which are ineligible for inclusion: Oil & Gas Producers (ICB 0530); Oil Equipment, Services & Distribution (ICB 0570); Coal (ICB 1771); and General Mining (ICB 1775). Excluded companies are replaced, one by one, by the eligible company with the LOWCII factor until all removed companies are replaced. The

constituent weights of replacement companies are calculated in proportion to their LOWCII factors and then scaled to replace the total weight of the excluded securities. The remaining constituents (i.e., non-replacement companies) are weighted by investable market capitalization. Approach: exclude by E, select by E, then reweight.

E - FTSE Environmental Markets, 2018 The FTSE Environmental Opportunities All-Share Index comprises all companies globally that have at least 20% of their business derived from environmental markets and technologies as defined by the FTSE Environmental Markets Classification System ("EMCS"). These include Renewable and Alternative Energy, Energy Efficiency; Water Infrastructure and Technology; Waste Management and Technologies; Pollution Control; Environmental Support Services; and Food, Agriculture and Forestry. Approach: select.

S - Women on Boards Leadership, 2018 The FTSE Women on Boards Leadership index series is designed to integrate leadership in gender diversity into a broad market benchmark. These indexes increase exposure to companies based on the strength of their diversity leadership at the board level and how well they manage wider impacts on society. This is achieved by using a tilt (or stock weight adjustment) to integrate gender diversity and social impact. Approach: select.

FTSE/Russell Indexes - SRI

ESG - FTSE4Good, 2001 The FTSE4Good benchmark and tradable indexes have been designed to measure the performance of companies utilizing globally recognized ESG standards to take account of ESG risk levels. They have also been designed to facilitate investment in those companies. The FTSE ESG ratings are used as the core basis to determine the constituents of the FTSE4Good Index. Each company in the research universe is given a FTSE ESG rating ranging from 0 to 5, with 5 being the highest rating. Companies involved in tobacco, coal, and controversial weapons are excluded. Approach: exclude.

E - ex-Fossil Fuels, 2014 This index series is a capitalization-weighted index designed to represent the performance of constituents of the parent index after the exclusion of companies that have a certain revenue and/or reserve exposure to oil, gas, and coal. A company is categorized as an excluded company if it satisfies the following conditions: (1) classified as in the ICB subsectors – Exploration & Production (Standard Industrial Code "SIC" 0533), Integrated Oil & Gas (0537), Coal Mining (SIC Code: 1771), and General Mining (SIC Code: 1775); and either have (2) revenues arising from Bituminous Coal and Lignite Surface Mining SIC Code: 1221), Bituminous Coal Underground Mining (SIC code: 1222), Anthracite Mining (SIC code: 1231), Crude Petroleum and Natural Gas (SIC code: 1311), and Natural Gas Liquids (SIC code: 1321) based on the companies' most recent published Annual Report and Accounts; or (3) proved and probable reserves in coal, oil, or gas based on the companies' most recent published annual report and accounts. Approach: exclude.

ES - Global Choice, 2018 The FTSE Global Choice index series is designed to help investors align their portfolios with their individual values by selecting companies based on the impact of their conduct and products on society and the environment. The FTSE Global Choice index series is a market cap weighted series with a rules-based methodology for defining how the products and conduct of a company impact society and the environment. The underlying framework includes large, mid, and small securities across developed and emerging markets globally with modular indexes available to target specific country markets. The result is a framework for applying robust and customizable values-based screens to a range of broad market indexes. Approach: exclude, select.

MSCI ESG Indexes - Integrate

ESG - ESG Leaders Designed to represent the performance of companies that have high ESG ratings relative to their sector peers to ensure the inclusion of the best-in-class companies from an ESG perspective. Approach: exclude, select, maintain.

ESG - ESG Focus Designed to target companies with positive ESG characteristics while closely representing the risk and return profile of the underlying market. Approach: exclude, reweight, optimize.

ESG - ESG Universal Designed to enhance exposure to ESG while maintaining a broad and diversified universe to invest in. Approach: exclude, reweight, maintain.

E - Low Carbon Target Designed to address two dimensions of carbon exposure – carbon emissions and fossil fuel reserves. By overweighting companies with low carbon emissions relative to sales and those with low potential carbon emissions per dollar of market capitalization, the indexes aim to reflect a lower carbon exposure than that of the broad market. Approach: reweight, optimize.

E - Low Carbon Leaders Aims to achieve at least 50% reduction in the carbon footprint of the parent index. Approach: exclude, reweight, optimize.

E - Climate Change Designed to enable investors to holistically integrate climate risk considerations in their investment process while increasing diversification through a rules-based reweighting methodology. Approach: exclude, reweight, maintain.

E - Climate Paris Aligned Designed to address climate change in a holistic way by minimizing its exposure to transition and physical climate risks and helping investors pursue new opportunities while aiming to align with the Paris Agreement requirements of limiting global warming to no more than 1.5°C. Approach: exclude, reweight, optimize.

MSCI ESG Indexes - Impact

ES - Sustainable Impact Designed to identify listed companies whose core business addresses at least one of the world's social and environmental challenges as defined by the UN SDGs. Approach: select.

E - Global Environment Designed to maximize its exposure to clean technology environmental themes. Approach: select.

SG - Women's Leadership Aims to include companies which lead in their respective countries in terms of female representation in board and in leadership positions. Approach: select.

MSCI ESG Indexes - SRI

ESG - SRI Designed to represent the performance of companies with high ESG ratings. They employ a 'best-in-class' selection approach to target the top 25% companies in each sector according to their MSCI ESG ratings. Approach: exclude, select, maintain.

ESG - KLD 400 Social Designed to provide exposure to companies with high MSCI ESG ratings while excluding companies whose products may have negative social or environmental impacts. Approach: exclude, select, maintain.

ESG - ESG Screened Designed for institutional investors and aim to exclude companies associated with controversial, civilian, nuclear weapons and tobacco that derive revenues from thermal coal and oil sands extraction or that are not in compliance with the UN Global Compact principles. Approach: exclude.

S - ex-Controversial Weapons Developed for use by investors, including pension funds and universal owners, who wish to avoid investments in cluster bombs, landmines, depleted uranium, chemical and biological weapons, blinding laser weapons, non-detectable fragments and incendiary weapons. Approach: exclude.

S - ex-Tobacco Involvement Designed for investors who seek to avoid investments in companies involved in the tobacco business. They are free float-adjusted market capitalization weighted. Approach: exclude.

E - ex-Fossil Fuels Developed for use by institutional investors, including pension funds, who aim to eliminate or reduce some or all fossil fuel reserves exposure from their investments. Approach: exclude.

S - Faith Based Designed to be used as a US equity benchmark for Catholic investors who seek equity ownership in alignment with the moral and social teachings of the Catholic Church. The MSCI Islamic index series follow Sharia investment principles. Approach: exclude.

S&P Dow Jones ESG Indexes - Integrate

ESG - Dow Jones Select ESG Real Estate Securities, 2021 The Dow Jones Select ESG Real Estate Securities indices include constituents from the Dow Jones Select Real Estate Securities indices. Exclusions are made and constituents are reweighted based on GRESB's real estate ESG assessment. Approach: exclude, reweight.

ESG - ESG Elite, 2020 The S&P ESG Elite indices are a best-in-class ESG index that is designed to measure the performance of securities meeting strict sustainability criteria while maintaining similar overall sector weights as the parent benchmark. Approach: exclude, select, maintain.

ESG - ESG, 2020 The S&P ESG indices are a broad-based, market-cap-weighted index that is designed to measure the performance of securities meeting sustainability criteria while maintaining similar overall industry group weights as their parent benchmarks. Approach: exclude, select, maintain.

ESG - ESG Select Equal Weight, 2019 The ESG Select Equal Weight Index family is designed to measure the equal-weighted performance of stocks with the highest S&PDJIESG scores among a subset of a larger universe measure by market. Approach: select, reweight.

ES - International Environmental & Socially Responsible, 2015 The S&P Environmental & Socially Responsible Index family is designed to measure the performance of securities from their parent benchmark that meet environmental and social sustainability criteria. Approach: exclude, select, maintain.

ESG - Dow Jones Sustainability Diversified, 2013 The Dow Jones Sustainability Diversified indices exhibit a sustainable tilt while minimizing region, industry, and size biases relative to traditional global benchmarks. They include the top 50% float-adjusted market capitalizations within regions and Global Industry Classification Standard sectors of the index universe based on their corporate sustainability score as measured by the Corporate Sustainability Assessment of S&P Global. Approach: exclude, select, maintain.

G - S&P/Drucker Institute Corporate Effectiveness, 2019 The S&P/Drucker Institute Corporate Effectiveness index is designed to track stocks in the S&P 500® that consistently rank highly on proprietary management criteria. These companies

create value through excellence in employee engagement and development, customer satisfaction, social responsibility, innovation, and high-quality earnings. Approach: select.

S&P Dow Jones ESG Indexes - Impact

E - Carbon Price Risk Adjusted, 2018. The S&P Carbon Price Risk Adjusted indices are designed to measure the performance of the constituent companies of their parent benchmark, reweighted to account for the potential specific impact of 2030 carbon prices on constituents' stock prices. Approach: reweight.

E - Global Carbon Efficient, 2009. The S&P Global Carbon Efficient indices are designed to measure the performance of companies in their parent benchmark while overweighting or underweighting those companies that have lower or higher levels of carbon emissions per unit of revenue. Approach: reweight.

E - Paris Aligned & Climate Transition (PACT), 2020 The S&P Paris Aligned & Climate Transition indices are designed to measure the performance of eligible equity securities from their parent benchmark, selected and weighted to be collectively compatible with a 1.5°C global warming climate scenario at the index level. Approach: exclude, optimize.

E - Global Clean Energy, 2007 The S&P Global Clean Energy Index provides liquid and tradable exposure to 30 companies from around the world that are involved in clean energy related businesses. The index comprises a diversified mix of clean energy production and clean energy equipment and technology companies. Approach: select.

E - Global Water, 2007 The S&P Global Water Index provides liquid and tradable exposure to 50 companies from around the world that are involved in water related businesses. To create diversified exposure across the global water market, the 50 constituents are distributed equally between two distinct clusters of water related businesses: Water Utilities & Infrastructure and Water Equipment & Materials. Approach: select.

S&P Dow Jones ESG Indexes - SRI

ESG - Dow Jones Sustainability, 2009 The Dow Jones Sustainability indices are designed to measure the performance of sustainability leaders as identified by S&P through a Corporate Sustainability Assessment (CSA). They represent the top 10-30% of the largest companies in different regions in the S&P Global Broad Market Index ("BMI") based on long-term economic, environmental and social criteria. Approach: select.

ESG - ESG Exclusion, 2019 The S&P ESG Exclusion indices are designed to measure the performance of parent benchmark constituents, excluding companies involved in controversial weapons, tobacco products, small arms, and thermal coal. Approach: exclude.

ESG - Sustainability Screened, 2020 The S&P Sustainability Screened indices measure the performance of stocks in their parent benchmark, excluding companies involved in controversial weapons, small arms, tobacco, and fossil fuels at specific involvement thresholds. Approach: exclude.

E - Global 1200 Fossil Fuel Free, 2015 The S&P Global 1200 Fossil Fuel Free indices are designed to measure the performance of companies in their parent benchmark region that do not own fossil fuel reserves. Fossil fuel reserves are defined as economically and technically recoverable sources of crude oil, natural gas and thermal coal. Approach: exclude.

E - Renewable Energy and Clean Technology, 2010 The S&P/TSX Renewable Energy and Clean Technology Index measures performance of companies listed on the TSX whose core business is the development of green technologies and sustainable infrastructure solutions. Constituents are screened by Sustainalytics, one of the world's leading providers of ESG research and analysis. Approach: select.

S- CAPEX & Human Capital, 2016 The JPX/S&P CAPEX & Human Capital indices are designed to measure the performance of Japanese companies that are proactively making investments in physical and human capital. Approach: select.

S - Catholic Values, 2015 The S&P 500® Catholic Values indices exclude certain activities that are not aligned with the Responsible Investment Guidelines of the U.S. Conference of Catholic Bishops (USCCB). The index family is designed for investors who do not want to breach religious norms in their passive investing strategies. Approach: exclude.

Appendix III: E, S, and G KPI descriptions

Environment

Weighted Avg. Carbon Emissions (Scope 1 and 2) Intensity	Scope 1 and 2 Carbon Emissions weighted by security weight in the index and summed to total index. This factor identifies the index's total (Scope 1 + Scope 2) carbon emissions intensity. Carbon intensity for each company is expressed as the issuer's total carbon emissions per million USD of revenue as a proxy of the carbon efficiency per unit of output.
Weighted Avg. Green Revenue Share	The weighted average of the share of net sales (reported or estimated) generated by each company with products/services defined as having a contributing impact on the achievement of the objective "Contributing to sustainable energy use." It is the sum of significant and limited net contribution percentage.
Disclosure-CDP Reporting (% Assets)	The percent of assets represented by companies that report to the CDP Greenhouse Gas ("GHG") Scope 1 and Scope 2 Emissions data as part of their response to CDP's Climate Change Questionnaire.
Science Based Targets (% Assets)	This metric provides the percent of assets accounted for by companies designated as having a Committed or Approved Science Based Target ("SBT") within the ISS factor - issuer GHG reduction targets. This factor differentiates an issuer's targets as "No Target," "Non-Ambitious Target," "Ambitious Target," "Committed SBT," or "Approved SBT" based on the existence and quality of GHG reduction targets. The factor considers both science-based targets and other targets set by the issuer.
Fossil Fuel Reserve Ownership (% Assets)	Percent of assets accounted for by companies identified as owning coal, oil, or gas reserves.
>20% Thermal Coal Revenues (% Assets)	Percent of assets accounted for by companies identified as generating greater than 20% of revenues from thermal coal.
>50% Fossil Fuel Revenues (% Assets)	Percent of assets accounted for by companies identified as generating greater than 50% of their revenues from fossil fuels. This may include energy and extractives companies such as coal, oil and natural gas exploration, extraction, power generation, refining, processing, distribution and services (services, equipment and support to fossil fuel operations).

Social

Weighted Average % Women on Board	The percent of female Board members by company, weighted by that company's share of assets, then summed to the total index.
Ethnic Diversity on Board (% Assets)	Number of companies with one or more ethnically diverse board member(s), weighted by each company's share of the index and summed to the total index.
UN Global Compact Verified Violations	Verified violations of any of the 10 principles of the UN Global Compact, which cover the areas of human rights, labor, environment, and anti-corruption. They are derived from: the Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption.

Governance

Different Voting Share Classes	The percent of assets accounted for by companies that have classes of stock with different voting rights or unequal ability to elect directors.
Weighted. Avg. % Independent Board	The weighted average percent of independent board members of total board members, according to ISS' local market classification.
1+ Financial Expert on Audit Committee	The percent of assets represented by companies with at least one financial expert on the audit committee

FIGURE 21

E, S, and G KPI Descriptions Using ISS ESG and SDG Data

Sources: ISS and Meketa Investment Group.

Appendix IV: UN Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a new, universal set of goals, targets, and indicators that UN member states will be expected to use to frame their agendas and political policies over the next 15 years. The 17 SDGs are listed below. Within the goals are 169 targets that put some specifics to these broad goals. The UN states that “responsible business and investment will be essential to achieving transformational change through the SDGs. For companies, successful implementation will strengthen the enabling environment for doing business and building markets around the world.”

1. No poverty. End poverty in all its forms everywhere.
2. Zero hunger. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.
3. Good health and well-being. Ensure healthy lives and promote well-being for all ages.
4. Quality education. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
5. Gender equality. Achieve gender equality and empower all women and girls.
6. Clean water and sanitation. Ensure availability and sustainable management of water and sanitation for all.
7. Affordable and clean energy. Ensure access to affordable, reliable, sustainable, and modern energy for all.
8. Decent work and economic growth. Promote sustained, inclusive, and sustainable economic growth; full and productive employment; and decent work for all.
9. Industry, innovation and infrastructure. Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.
10. Reduced inequality. Reduce inequality within and among countries.
11. Sustainable cities and communities. Make cities and human settlements inclusive, safe, resilient, and sustainable.
12. Responsible production and consumption. Ensure sustainable consumption and production patterns.
13. Climate action. Take urgent action to combat climate change and its impacts.
14. Life below water. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.
15. Life on land. Protect, restore, and promote sustainable use of terrestrial ecosystems; sustainably manage forests; combat desertification; halt and reverse land degradation; and halt biodiversity loss.
16. Peace justice and strong institutions. Promote peaceful and inclusive societies for sustainable development; provide access to justice for all; and build effective, accountable, and inclusive institutions at all levels.
17. Partnerships for the goals. Strengthen the means of implementation and revitalize the global partnership for sustainable development.

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