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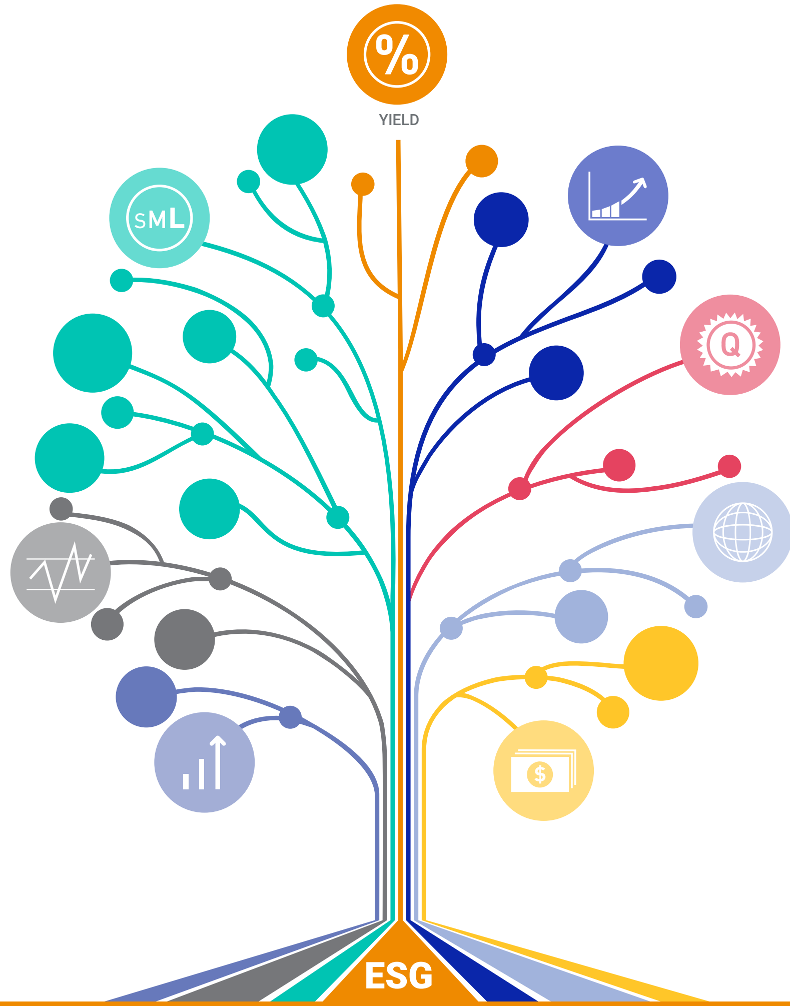
High Dividend Yield ESG Reduced Carbon Target Select Indexes



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Factors by MSCI

Factors are the building blocks of many portfolios – the elements capable of turning data points into actionable insights.

Introduction

Equity yield strategies have long been the cornerstone of many portfolios for various reasons. Some investors might simply favour equity dividends as a source of income in the prolonged low-yield environment, while others may view strong dividend yield as an indicator of robust financial management, or future earnings growth. Accordingly, the Yield factor remains a significant contributor to the growing trend towards factor indexes, with factor ETF assets alone crossing $2.1 trillion, as of November 2023[1].

The growth in ESG (environmental, social and governance) is similarly strong, with the number of UN Principles for Responsible Investment (PRI) signatories reaching 5,300 as of September 2023[2].

ESG investors have long focused on the exclusion of weapons, alcohol, or tobacco producers. Today, we are seeing a more holistic view of ESG being used to manage risk, placing ESG principles within factor models in the risk management toolbox.

With Factor and ESG investing becoming mainstream, there has been increased demand from professional investors to incorporate both Factor and ESG principles to manage and attribute risk.

For many investment managers and product providers, the key challenge of combining Factor and ESG into a single portfolio has been to construct an appropriate methodological framework to balance the desired factor exposure while meeting ESG considerations. This balance has historically been even more elusive for dividend yield portfolios, as these indexes tended to have positive bias towards high carbon emitting sectors such as Utilities and Energy. MSCI is at the forefront of the integration of ESG into factor portfolios to enable investors to better manage key drivers of risk and return with an extensive set of risk factor models, ESG research and factor and ESG indexes[3].

1. Source: Refinitiv Lipper. Only primary listing, not cross/listing , are counted. MSCI does not guarantee the accuracy of third-party data.
2. United Nations Principles for Responsible Investing. http://www.unpri.org/
3. ESG research, rating and data are produced by MSCI ESG Research LLC. MSCI ESG Indexes and Analytics utilize information from, but are not provided by, MSCI ESG Research LLC. MSCI Indexes and Analytics are products of MSCI Inc. MSCI Indexes are administered by MSCI Limited (UK).

Index methodology[4] review

The MSCI High dividend yield ESG Reduced Carbon Target Select Indexes are designed to represent the performance of a strategy that seeks systematic integration of environmental, social and governance (ESG) norms and maximize its exposure to the Yield factor.

The Indexes are constructed by selecting constituents of a market capitalization weighted index (the 'Parent Index') through an optimization process that aims to maximize exposure to the Yield factor, minimize tracking error, minimize carbon equivalent exposure to CO2 and other GHG as well as reduce its exposure to potential emissions risk of fossil fuel reserves by thirty percent (30%) and improve the weighted-average industry-adjusted ESG score of the Index by 20% with respect to their respective underlying market capitalization weighted indexes (the 'Parent Index').

Constructing the Indexes involves the following steps:

› **Defining the parent index and the base currency for optimization**
  Construction of the MSCI High Dividend Yield ESG Reduced Carbon Target Select Indexes begins with identifying the Parent Index and the eligible universe for optimization. The Parent Index serves as the universe of eligible securities for optimization.

› **Defining the exclusion criteria**

  ›› **Controversy-based exclusion criteria**
  Securities of companies involved in "Very Severe" business controversies as defined by the MSCI ESG Controversies Methodology are not eligible for inclusion in the Indexes. This is implemented by excluding constituents of the Parent Index with ESG Controversy Score = 0 ('Red Flag' companies).

  ›› **Business exclusion criteria**
  Companies that are involved in specific businesses which have high potential for negative social and/or environmental impact are ineligible for inclusion in the index.

  - Controversial Weapons
  - Conventional Weapons
  - Nuclear Weapons
  - Civilian Firearms
  - Tobacco
  - Thermal Coal
  - Oil Sands

  In addition to the above, companies that fail to comply with the United Nations Global Compact Principles are also excluded from the Indexes. Please refer to Appendix II for more details on these criteria.

  ›› **Other exclusion criteria**

  - Missing Controversy Score – Companies not assessed by MSCI ESG Research's MSCI ESG Controversy Scores are excluded from the index.
  - Missing ESG Rating or ESG Score – Companies which are not rated by MSCI ESG Research for an MSCI ESG Rating are excluded from the index

4. MSCI High Dividend Yield ESG Reduced Carbon Target Select Indexes methodology

Index methodology[5] review

› **Dividend Yield-Related screens**

›› **Dividend sustainability screening**
Securities with zero or negative payout ratios[6] are not considered for inclusion in the MSCI High Dividend Yield ESG Reduced Carbon Target Select Indexes. Additionally, within each sector, securities in top 5% ranked in descending order of payout ratio within the universe of securities with positive payout, are not considered eligible for inclusion in the Index.

›› **Dividend persistence screening**
Securities with a negative 5-year dividend per share (5Y DPS) growth rate[7] are also excluded from the index. Securities which have insufficient data to calculate a 5Y DPS growth rate are not excluded from the Index.

›› **Quality screening**
Securities with negative sector-relative Quality z-score are not considered for inclusion in the Indexes. The sector-relative Quality z-scores are calculated using fundamental variables such as Return on Equity, Earnings Variability and Debt to Equity. For the details on computation of the Quality z-scores, please refer to the Section 2.2 of the MSCI Quality Indexes Methodology (for details about the methodology, please refer to: https://www.msci.com/index-methodology).

›› **Price performance screening**
Within each sector, securities in the bottom 5% of the universe of securities ranked by negative 1-year price performance are excluded from the Index.

› **Defining the security level carbon exposure**
The carbon exposure of a security is measured in terms of its greenhouse gas emissions and its potential carbon emissions from fossil fuel reserves. The Indexes use MSCI Climate Change Metrics data from MSCI ESG Research

›› **Greenhouse gas emissions**
MSCI ESG Research collects company-specific direct (Scope 1) and indirect (Scope 2) greenhouse gas (GHG) emissions data from company public documents and/or the Carbon Disclosure Project. If a company does not report GHG emissions, then MSCI ESG Research uses its proprietary methodology to estimate Scope 1 and Scope 2 GHG emissions. For newly added companies to the

5. MSCI High Dividend Yield ESG Reduced Carbon Target Select Indexes methodology

6,7. Please refer to Appendix of MSCI High Dividend Yield Indexes Methodology for definition of Payout Ratio and 5Y DPS growth and their calculation.

Index which do not report emission data and where MSCI ESG Research has not estimated the greenhouse gas emissions yet, MSCI uses the average emissions per dollar of issuer market capitalization for the companies in the same industry group, multiplied by the market capitalization of the company as the estimated emission for the company.

- **Potential carbon emissions from fossil fuels**
  MSCI ESG Research collects fossil fuel reserves data where relevant for companies which have reserves, typically in the Oil & Gas, Coal Mining and Electric Utilities industries. Fossil fuel reserves can be used for several applications including energy or industrial (e.g. coking coal used for steel production). For the Indexes, only fossil fuel reserves used for energy are taken into account. The data is updated on an annual basis and based on information disclosed by companies. Sources include company publications, other public records and third party data providers. For newly added companies to the index where data is not available yet, MSCI uses zero fossil fuel reserves. The size of reserves of a company typically influences its market valuation, and hence MSCI normalizes for size by dividing the potential carbon emissions of the company by its market capitalization. To convert reserves data to potential carbon emissions, MSCI ESG Research applies a formula from the Potsdam Institute for Climate Impact Research[9].

Defining The Optimization Setup

The optimization objective is to maximize the sector-relative gross dividend yield zscore of the index[10], while controlling the ex-ante tracking error relative to the Parent Index at the time of rebalancing. The optimization is performed from a base currency perspective and does not allow short selling of securities. The default currency is the US Dollar.

- **Calculation of the sector relative grossed-up divivdend yield zscore**
  The sector-relative grossed-up dividend yield z-score for each security is calculated using the formulae defined in Appendix III of methodology book.

8. MSCI High Dividend Yield ESG Reduced Carbon Target Select Indexes methodology
9. Malte Meinshausen, Nicolai Meinshausen, William Hare, Sarah C. B. Raper, Katja Frieler, Reto Knutti, David J. Frame & Myles R. Allen. Greenhouse-gas emission Target for limiting global warming to 2 °C. Nature 458, 1158-1162 (30 April 2009) | doi: 10.1038/nature08017; Received 25 September 2008; Accepted 25 March 2009. Supplementary Information, p. 7.
10. Weighted-average sector-relative gross dividend yield z- score of the Index

Index methodology[11] review

Optimization constraints

At each Semi-Annual Index Review (SAIR), the following optimization constraints are employed, which aim to ensure replicability and investability:

- The weighted-average dividend yield of the Index will be targeted to be 50% more (soft constraint) and constrained to be at least 30% more (hard constraint) than the weighted-average dividend yield of the Parent Index at the time of rebalancing
- The ex-ante tracking error of the Index, relative to the Parent Index will be constrained to be equal to or less than 5%
- The maximum weight of an index constituent will be restricted to the lower of (the weight of the security in the Parent Index + 2%) and 10 times the weight of the security in the Parent Index. The minimum weight of an index constituent will be restricted to be the higher of the (weight of the security in the Parent Index - 2%) and 0
- For countries with weight greater than 2.5% in a composite Parent Index, the weight in the Index will not deviate more than +/-20% from the country weight in the Parent Index
- For countries with weight less than 2.5% in a composite Parent Index, the weight in the Index will be capped at 3 times their weight in the Parent Index
- The above country weight constraint will also apply on China A Stock Connect listings as a group separately in addition to the usual country weight constraint on China
- The sector weights of Index will not deviate more than +/-5% from the sector weights of the Parent Index
- The weighted-average industry-adjusted ESG score of the Index will be at least 20% more than the weighted-average industry-adjusted ESG score of the Parent Index at the time of rebalancing
- The minimum reduction in the Weighted Average Carbon Emission Intensity relative to the Parent Index will be 30%
- The minimum reduction in the Potential Emissions per dollar of market capitalization relative to the Parent Index will be 30%
- The one-way turnover of the Index is constrained to a maximum of 20% at each SAIR

11. MSCI High Dividend Yield ESG Reduced Carbon Target Select Indexes methodology

Mantaining the Index

Semi-annual index reviews

The MSCI High Dividend Yield ESG Reduced Carbon Target Select Indexes are rebalanced on a semi-annual basis, usually as of the close of the last business day of May and November, coinciding with the May and November Semi-Annual Index Reviews (SAIRs) of the MSCI Global Investable Market Indexes. Fundamental variables and Barra Equity Model data as of the end of April and October are used respectively. In general, MSCI uses MSCI ESG Research data (including MSCI ESG Ratings, MSCI ESG Controversies Scores, MSCI Business Involvement Screening Research and MSCI Climate-change metrics) as of the end of the month preceding the Index Reviews for the rebalancing of the Index.

Index review

We simulated the index methodology from February 2012 through December 2023 comparing the risk, return and ESG characteristics of the MSCI World High Dividend Yield ESG Reduced Carbon Target Select Indexes relative to the standard MSCI World High Dividend Yield Index and the parent MSCI World Index[12]. Over this period the MSCI World High Dividend Yield ESG Reduced Carbon Target Select Indexes generated higher returns than the MSCI World High Dividend Yield Index, with an improved return over risk ratio (of 0.62 versus 0.57) as shown in Table 1.

12. This paper contains analysis of historical data, which may include hypothetical, backtested or simulated performance results. There are frequently material differences between backtested or simulated performance results and actual results subsequently achieved by any investment strategy. The analysis and observations in this paper are limited solely to the period of the relevant historical data, backtest or simulation. Past performance — whether actual, backtested or simulated — is no indication or guarantee of future performance. None of the information or analysis herein is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision or asset allocation and should not be relied on as such.

Table 1 - Key metrics

	MSCI World Index	MSCI World High Dividend Yield Index	MSCI World HDY ESG Reduced Carbon Target Select Index
Total return* (%)	9.9	7.3	8.7
Total risk (%)	14.4	12.7	14.0
Return / risk	0.68	0.57	0.62
Sharpe ratio	0.61	0.49	0.54
Active return (%)	0.0	-2.6	-1.2
Tracking error (%)	0.0	5.3	4.0
Information Ratio		-0.49	-0.29
Historical beta	1.00	0.82	0.93
Number of constituents* **	1606	306	171
Turnover (%)**	1.7	19.0	39.6
Price to book* **	2.3	2.3	2.3
Price to earnings* **	19.0	15.1	14.5
Dividend yield* (%)**	2.3	3.9	4.0

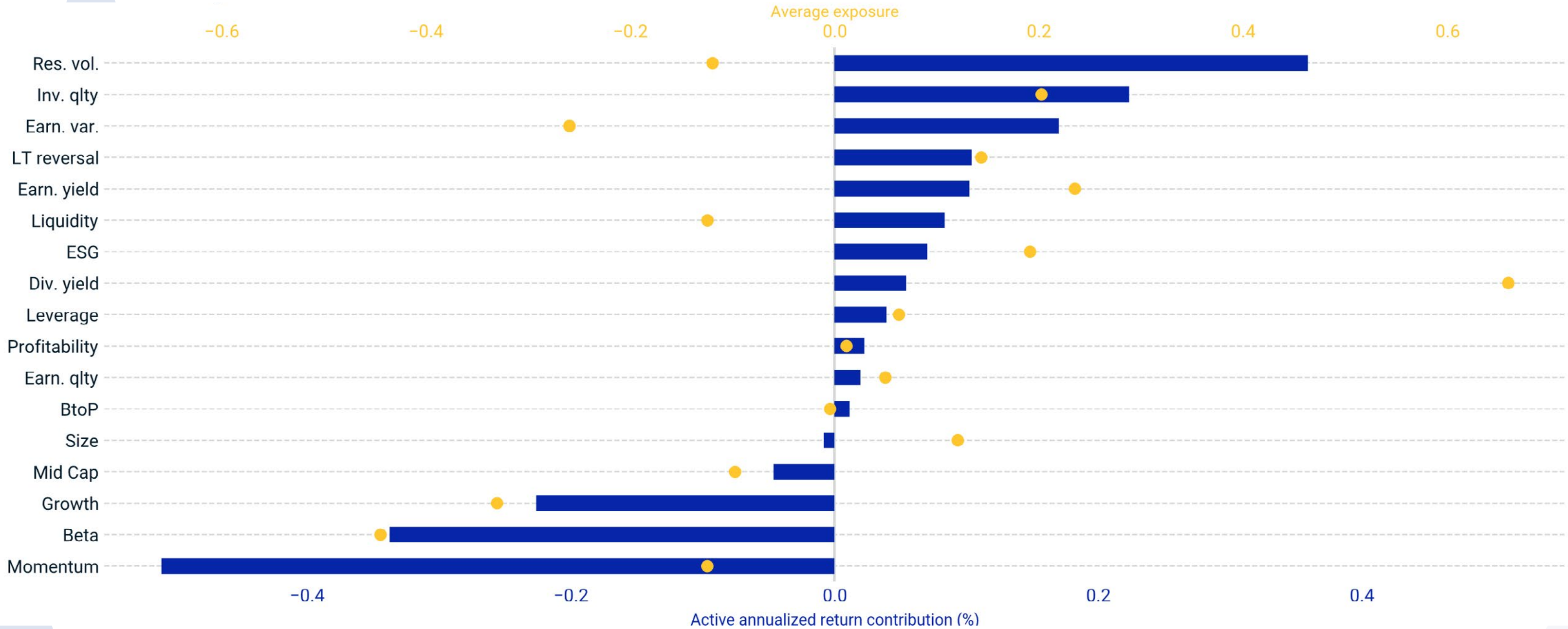
Period: Feb 29, 2012 to Dec 29, 2023

* Net returns annualized in USD

** Annualized one-way index turnover over index reviews

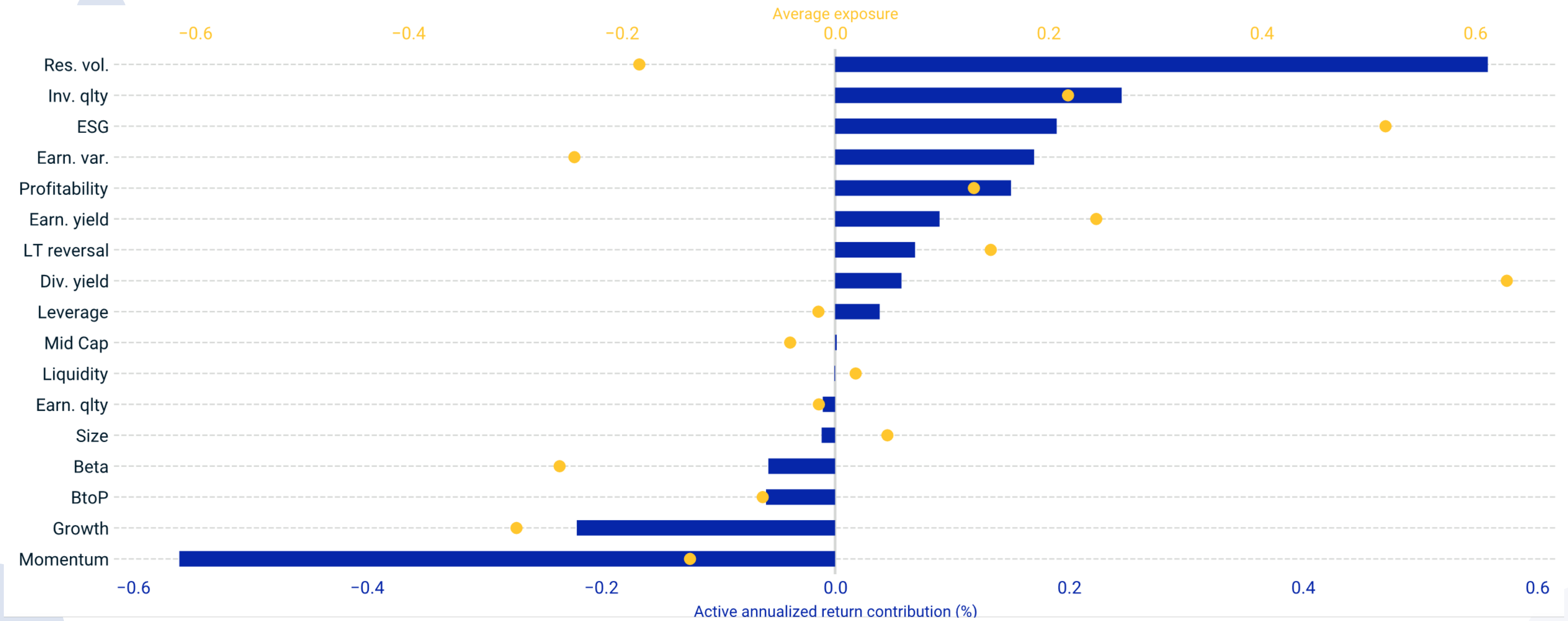
*** Monthly averages

MSCI World High Dividend Yield Index



Period: Feb 29, 2012 to Dec 29, 2023.

MSCI World High Dividend Yield ESG Reduced Carbon Target Select Index



Period: Feb 29, 2012 to Dec 29, 2023.

Table 2 - ESG Metrics > Climate Change

	MSCI World Index	MSCI World High Dividend Yield Index	MSCI World HDY ESG Reduced Carbon Target Select Index
Climate Footprint			
Carbon Intensity to EVIC - Scope 1 + 2 + 3*	362	671	331
Carbon Intensity to EVIC - Scope 1 + 2*	42	81	31
Carbon Intensity (t CO2e/$M Sales) - Scope 1 + 2	135	166	69
Carbon Emissions to Sales - Scope 1 + 2 + 3**	810	1222	683
Carbon Emissions to Sales - Scope 1 + 2**	106	201	57
Carbon Emissions (t CO2e/$M Invested) - Scope 1 + 2	63	117	47
Companies Reporting Scope 12 Emissions (%)	89.0	92.7	92.1
Fossil Fuel Exposure			
Potential Carbon Emissions (t CO2e/$M Invested)	1030	2362	500
Fossil Fuel Reserves (%)	6.1	13.1	3.3
Thermal Coal Mining (%)	0.8	2.7	0.9
Unconventional Oil & Gas Extraction (%)	3.5	8.3	1.3
Low Carbon Transition Risk Assessment			
Low Carbon Transition Score	6.2	5.7	6.2
Solutions (%)	11.3	2.9	8.0
Product & Operational Transition (%)	14.0	27.6	8.6
Asset Stranding (%)	0.3	0.4	0.0
Transition Opportunities			
Clean Technologies Solutions (> 20% Revenue)	12.2	6.3	8.9
Green Revenues (wtd Avg %)	6.2	3.6	4.0
Count of Companies with Green Business >= 20%	120	22	13
Green/fossil Fuel-Based Net Revenue Ratio	1.7	0.4	2.6

As of December 29, 2023.* Wtd Avg t CO2e/$M EVIC** Wtd Avg t CO2e/$M Sales

	MSCI World Index	MSCI World High Dividend Yield Index	MSCI World HDY ESG Reduced Carbon Target Select Index
Companies Transition Plans			
Companies with GHG Emissions Reduction Targets (%)	88.6	95.3	98.7
Companies with SBTi-Approved Targets (%)	43.0	49.0	62.1
Count of Companies with Approved SBTi	530	153	97
Power Generation Revenue by Energy Source			
Thermal Coal (%)	2.4	3.6	1.1
Renewables (%)	3.8	6.4	2.9
Liquid Fuel (%)	1.0	2.7	1.0
Power Generation Output by Energy Source			
Thermal Coal (GWh)	621.8	758.3	197.2
Renewables (GWh)	836.0	1424.4	1019.0
Liquid Fuel (GWh)	25.2	6.6	145.7
Other Climate Metrics			
Exposure to Carbon-Related Assets (%)	6.9	16.1	6.1
Climate-Related Controversies (%, Score ≤ 4)	4.8	15.4	3.5
Low Carbon Transition Management Score (% Top Quartile)	71.3	72.0	76.6
Companies with Credible Track Record (%)*	7.9	9.5	12.2
Count of Companies with Credible Track Record*	168	40	27
Companies in Best Quartile of Climate Risk Management Score (%)*	38.2	47.7	49.3
Companies in Best Quartile of Green Business Score (%)*	17.1	7.9	10.4
Climate Scenario Analysis (1.5°C)			
Aggregate Climate VaR (%)	-16.2	-28.9	-19.3
Policy Climate VaR (%)	-12.3	-24.0	-12.9
Technology Opportunities Climate VaR (%)	5.6	9.7	6.9
Physical Risk Climate VaR (%)	-9.5	-14.6	-13.4
Implied Temperature Rise			
Implied Temperature Rise (°C)	2.3	2.7	1.8

As of December 29, 2023.* Rankings are calculated using the benchmark as parent index

Potential **applications**

Indexes are often used as performance benchmarks for active managers. Investors may also use policy benchmarks in their strategic asset allocation to define eligible markets and the universe of eligible securities for their portfolios. At the same time, they may use them to define active or passive allocations when implementing their asset allocation strategies.

Conclusion

Addressing corporate ESG considerations and the risks of not transitioning to low carbon portfolio exposure has become increasingly important for many global investors. At the same time, an increasing number of European regulators are requiring institutional investors to consider ESG and carbon risks that may be financially relevant to their investment processes. Simultaneously, Yield indexes are uniquely designed to reflect the Yield premium and have been used to provide risk-adjusted performance while maintaining strong investability.

The MSCI High Dividend Yield ESG Reduced Carbon Target Select Indexes are designed to help investors get exposure to Yield strategies combined with ESG principles. These indexes were constructed to preserve the factor exposure and have historically provided higher risk-adjusted returns vs cap-weighted indexes, improved ESG scores and reduced carbon footprints. In addition, these indexes exclude business activities that are commonly seen as controversial, such as tobacco production and weapons manufacturing.

About MSCI Inc.

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process.

To learn more, please visit **www.msci.com/esg-investing**.