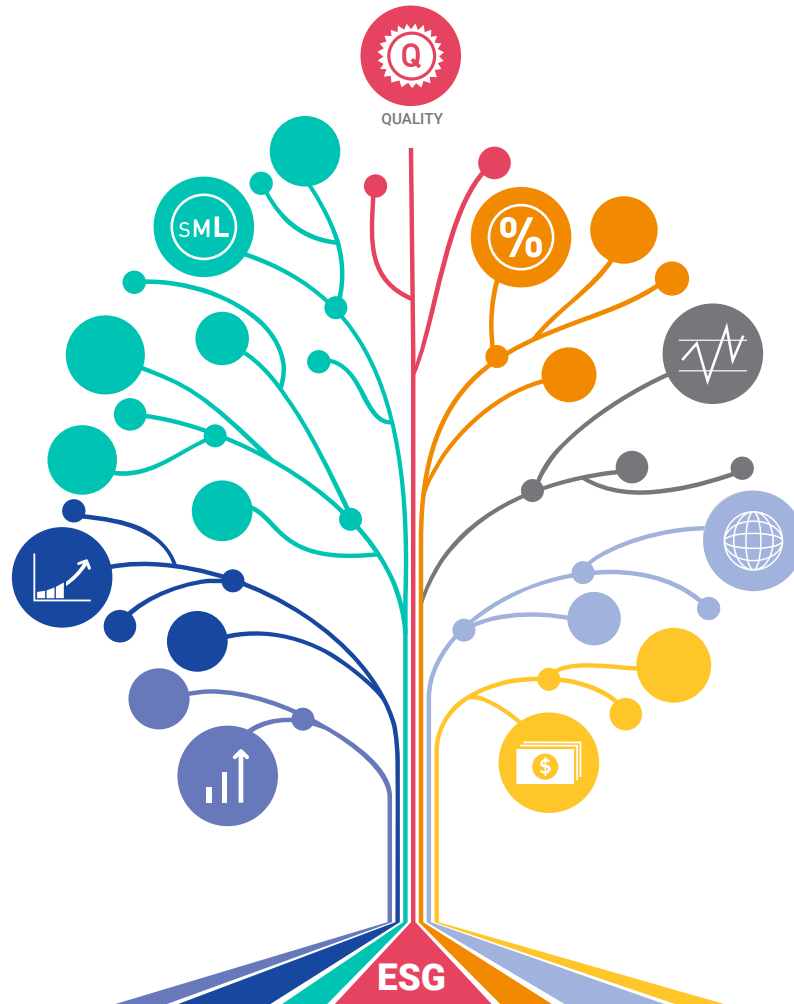
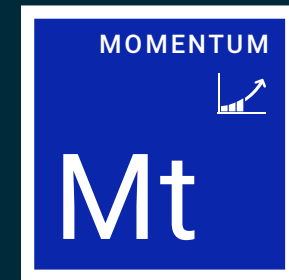
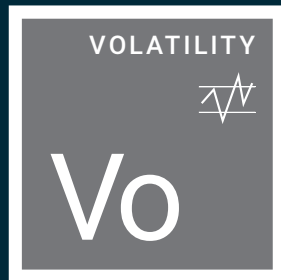


Quality ESG Reduced Carbon Target Select Indexes



Elements of performance™

Factors by MSCI



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



Introduction

With factor investing becoming mainstream and the exponential growth of ESG investing, there has been increased demand from professional investors to incorporate Factor and ESG (environmental, social and governance) principles to manage and attribute risk. In fact, according to our findings in the MSCI Investments Insights 2021¹, nearly 1-in-2 institutional clients state that factors are central to their asset allocation and fully 52% of investors are adopting an ESG framework. While factor investing has long been a part of the investment discussion, the use of factor models and indexes has grown more common among mainstream investors who seek to manage portfolio risk and identify investment opportunities.

Factor Investing, also known as Strategic Beta investing, has experienced significant growth – with ETF based assets crossing \$1.53 trillion as of December 2021².

The growth in ESG is similarly strong, with the number of UN Principles for Responsible Investment (PRI) signatories reaching 3,800 as of year 2021³. ESG investors have long focused on exclusions 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.

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. 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 indexes⁴.

1. MSCI Investment Insights 2021: Global Institutional Investor Survey

2. All data as of December 2021; Source: Refinitiv Lipper. Only primary listing, not cross/listing, are counted. MSCI does not guarantee the accuracy of third-party data.

3. United Nations Principles for Responsible Investing. <http://www.unpri.org/>

4. 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 methodology⁵

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The MSCI Quality 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 Quality 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 Quality 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 Quality ESG Reduced Carbon Target Select Index (herein, 'the Index') begins with identifying the Parent Index and the eligible universe for optimization to maximize the index-level exposure to the quality factor while controlling ex-ante tracking error relative to the Parent Index. The Parent Indexes serve as the universe of eligible securities for optimization. The optimization is performed from a base currency perspective and does not allow short selling of securities. The default currency is the US Dollar.

Defining the 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 MSCI Quality ESG Reduced Carbon Target Select 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
- » Nuclear Weapons
- » Civilian Firearms
- » Tobacco
- » Thermal Coal
- » Oil Sands

Companies that fail to comply with the United Nations Global Compact Principles are also excluded from the MSCI Quality ESG Reduced Carbon Target Select Indexes

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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

Defining the Security Level Carbon Exposure

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 methodology¹ to estimate Scope 1 and Scope 2 GHG emissions. For newly added companies to the 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. The weight of an index constituent will be restricted to be the higher of the (weight of the security in the Parent Index - 2%) and 0.05%

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 MSCI Quality ESG Reduced Carbon Target Select 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.

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Defining the Optimization Setup

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

- » The ex-ante tracking error of the Index, relative to the Parent Index will be constrained to be no more 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 0.05%
- » The minimum number of index constituents will be 100
- » For countries with weight greater than 2.5% in a composite Parent Index, the weight in the MSCI Quality ESG Reduced Carbon Target Select Index will not deviate more than +/-5% 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 MSCI Quality ESG Reduced Carbon Target Select 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 the MSCI Quality ESG Reduced Carbon Target Select 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 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 MSCI Quality ESG Reduced Carbon Target Select Index is constrained to a maximum of 20% at each SAIR

5. MSCI Quality ESG Reduced Carbon Target Select Indexes Methodology



Maintaining the index

Semi-Annual Index Reviews

The MSCI Quality 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 May 2010 through December 2021 comparing the risk, return and ESG characteristics of the MSCI World Quality ESG Reduced Carbon Target Select Indexes relative to MSCI World Index and the standard MSCI World Sector Neutral Quality Index⁶. We found that the MSCI World Quality ESG Reduced Carbon Target Select Indexes generated higher returns and lower risk relative to MSCI World and delivered higher return and similar risk to the standard MSCI World Sector Neutral Quality Index – with an improved information ratio (of 0.92 versus 0.53, as shown in table 1).

6. 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 Sector Neutral Quality Index	MSCI World Quality ESG Reduced Carbon Target Select Index
Total return* (%)	12.1	13.3	14.6
Total risk (%)	14.0	13.4	13.4
Return / risk	0.86	0.99	1.09
Sharpe ratio	0.82	0.95	1.05
Active return (%)	0.0	1.3	2.5
Tracking error (%)	0.0	2.4	2.8
Information Ratio	nan	0.53	0.92
Historical beta	1.00	0.95	0.94
Number of constituents***	1628	299	170
Turnover** (%)	1.8	29.9	39.0
Price to book***	2.2	3.6	4.3
Price to earnings***	18.3	16.8	17.4
Dividend yield*** (%)	2.4	2.5	2.4

Period: May 31, 2010 to Dec 31, 2021

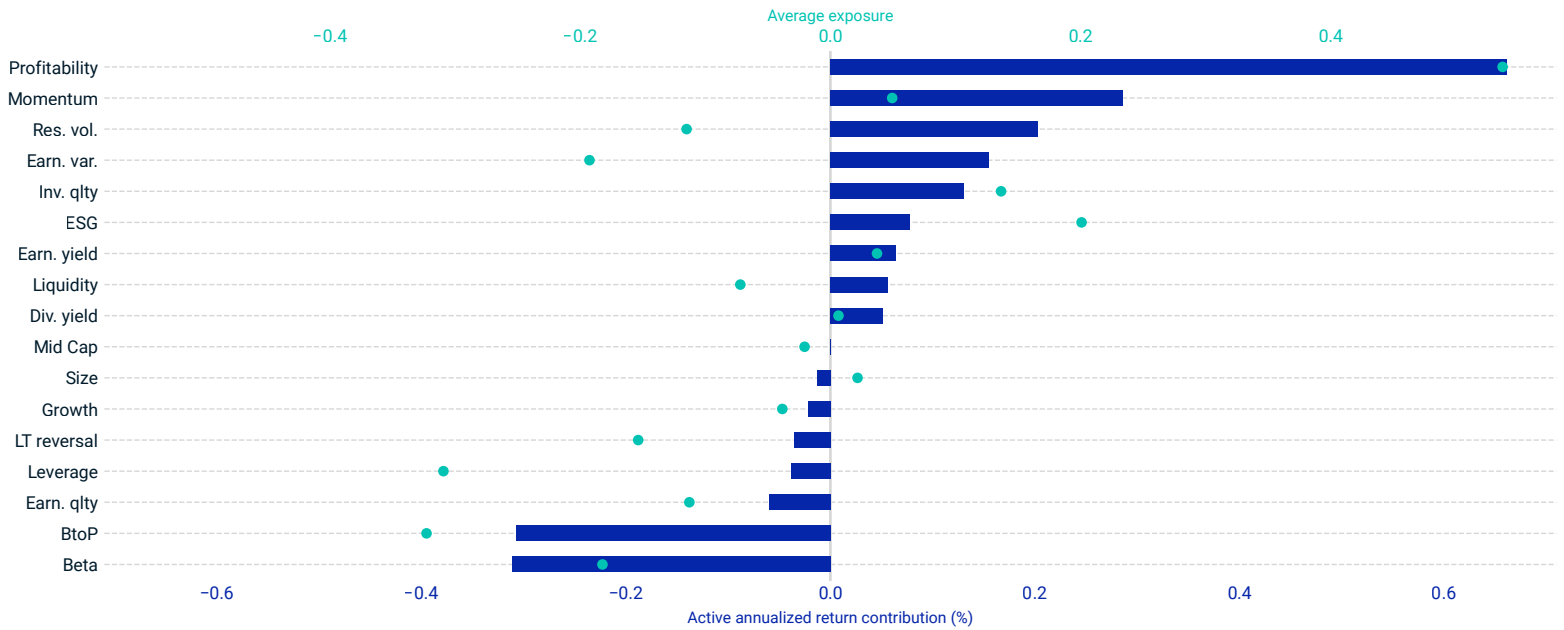
* Net returns annualized in USD

** Annualized one-way index turnover over index reviews

*** Monthly averages



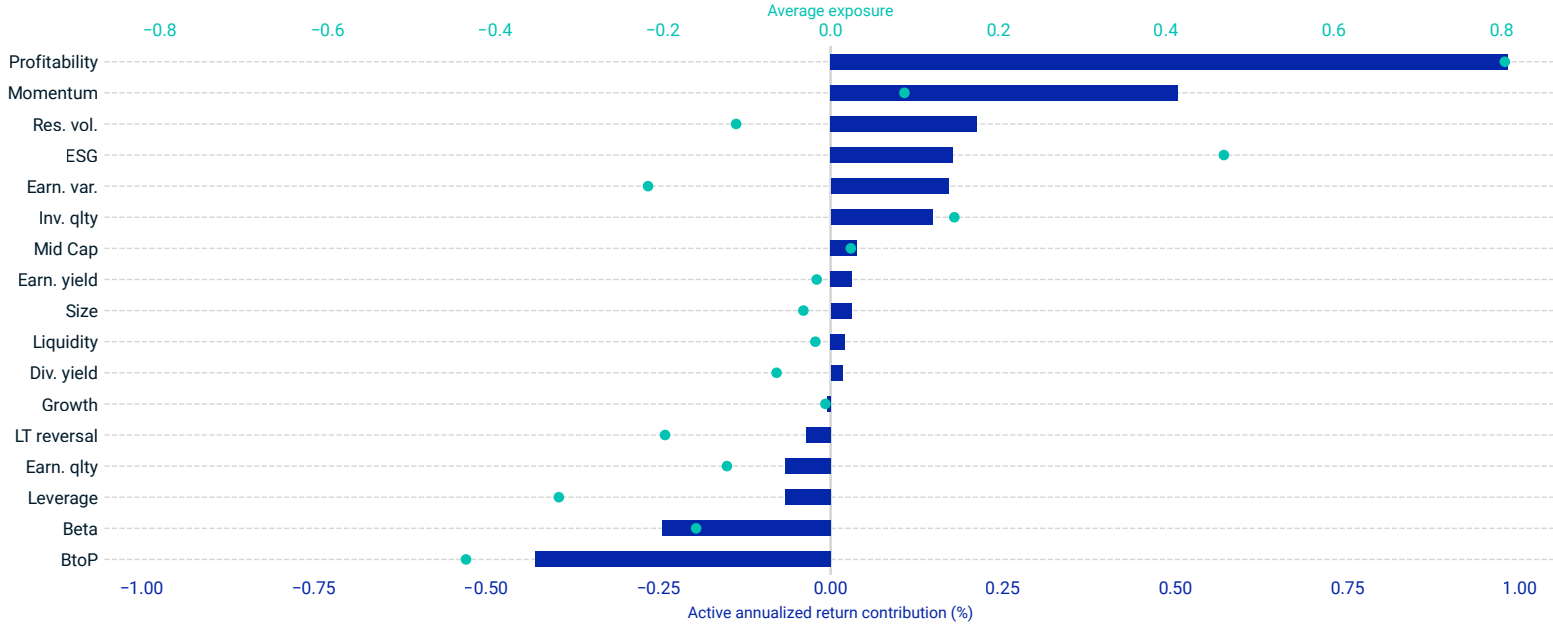
MSCI World Sector Neutral Quality Index



Period: May 31, 2010 to Dec 31, 2021



MSCI World Quality ESG Reduced Carbon Target Select Index



Period: May 31, 2010 to Dec 31, 2021



Table 2 - ESG Metrics > Climate Change

	MSCI World Index	MSCI World Sector Neutral Quality Index	MSCI World Quality ESG Reduced Carbon Target Select Index
Climate footprint			
Carbon emissions (t CO2e/\$M invested)	61	37	26
Carbon intensity (t CO2e/\$M sales)	158	128	84
Wtd avg carbon intensity (t CO2e/\$M sales)	130	95	55
Low carbon transition risks			
Low carbon transition score	6.2	6.1	6.3
Solutions (%)	7.8	4.5	6.3
Product & operational transition (%)	13.0	13.7	8.1
Asset stranding (%)	0.3	0.1	0.0
Exposure to asset stranding risks			
Potential carbon emissions (t CO2e/\$M invested)	1087	1204	195
Fossil fuel reserves (%)	4.5	3.7	1.5
Thermal coal mining (%)	0.8	1.5	0.0
Thermal coal-based power generation (%)	2.6	2.1	1.1
Unconventional oil & gas extraction (%)	2.6	1.5	0.7
Exposure to clean technology solutions			
Clean technologies solutions (> 20% revenue)	10.5	8.4	10.1
Clean technologies solutions revenue (wtd avg %)	5.6	3.7	4.2
Green/brown net revenue exposure	3.3	3.0	5.6
Other climate metrics			
Exposure to carbon-related assets (%)	5.7	5.8	3.6
Climate-related Controversies (% , Score <= 4)	0.2	0.3	0.0
Low Carbon Transition Management Score (% Top Quartile)	71.2	65.8	70.2

As of Dec 31, 2021



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, Quality indexes are uniquely designed to reflect the Quality premium and have been used to provide risk-adjusted performance while maintaining strong investability.

The MSCI Quality ESG Reduced Carbon Target Select Indexes are designed to help investors get exposure to Quality 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.

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