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MSCI Climate Indexes

A PRODUCT INSIGHT FOR INSTITUTIONAL INVESTORS

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Foreword

The world's attitude to climate change is rapidly evolving. What was once perceived as a relatively distant concern has become an imminent and increasingly urgent threat. As we reach this inflection point, investors are now publicly expressing a desire to take action.

As a result, measuring and managing climate risk has become an ever-more important tenet of the institutional investment process. So is identifying new and innovative low-carbon investment opportunities in order to help build more climate-resilient portfolios.

Until now, measuring the potential impact of transitional or physical risks or the economic impact of climate change on portfolios was limited due to the lack of tools available to investors.

We believe climate change will become a significant investment risk factor over the long term and MSCI is committed to creating solutions to support investors' decision-making. Institutional investors should be able to analyse the exposure of their portfolios to climate risk and opportunities while also being able to report on their climate strategy. We hope this guide goes some way to support them with their objectives.

MSCI recently published The MSCI Principles of Sustainable Investing[1], a framework designed to illustrate specific, actionable steps that investors can and should undertake to improve practices for environmental, social and governance (ESG) integration across the investment value chain. We strongly believe that a systemic and large-scale integration of ESG considerations throughout the entire investment process should enable a more efficient allocation of capital globally towards the most productive assets in the long term and contribute to a more effective and balanced transition towards a sustainable and inclusive economy.

Remy Briand

Head of ESG at MSCI

[1] https://www.msci.com/documents/10199/16912162/MSCI-ESG-House-View-FINAL.pdf/63bba1a1-aecf-ba80-aa49-7910748ed942

Introduction

Global warming and climate change present one of the biggest economic and social challenges of the 21st century. Since 1990, economic damage due to climate-related disasters has increased more than sevenfold.[2] The misconception that climate change is only a long-term risk consideration is now more evident than ever. Companies are already facing both physical impacts such as water shortages and hurricane damage,[3] and transition risks such as growing carbon regulations or reduced fossil fuel demand.[4] Climate risks may therefore pose an immediate as well as long-term threat to some investment portfolios.

Some of the global responses to address these challenges have wide-reaching implications for many industries. We have already seen falling demand for carbon-intensive products — e.g., coal, coal-fired power and high-cost oil production — which has led to asset write-offs and bankruptcies over the last five years.[5] Transitioning to a low-carbon world could put assets worth an estimated USD 25 trillion at risk of stranding in the fossil-fuel industry alone.[6]

The headwinds faced by carbon-intensive industries could also put at risk "carbon-dependent" industries that are affected by the business cycles of carbon-intensive industries.7 For example, in June 2019, Ford announced it will have to cut 12,000 jobs in Europe by the end of 2020[8]. The challenge of investing in electric, hybrid and autonomous vehicles while having to overhaul combustion engines to meet new clean-air rules, has forced Europe's carmakers to slash fixed costs and streamline their model portfolios.

In June 2020, BP announced its plans to lay off 10,000 staff by the end of the year and to write off almost USD 17.5 billion of assets after reducing its long-term oil

[2] The annual economic damages due to climate-related disasters have increased from USD 14 billion during the 19801990 period to USD 100 billion in the 2004-2014 period. Source: Food and Agriculture Organization of the United Nations; http://www.fao.org/3/a-i6486e.pdf

[3] Insurance Business Canada, 2018, https://www.insurancebusinessmag.com/ca/news/catastrophe/insurance-companies-facing-us20-billion-exposure-from-hurricane-florence-111280.aspx

[4] Carbon Tracker 2020 vision: why you should see peak fossil fuels coming. https://www.carbontracker.org/reports/2020-vision-why-you-should-see-the-fossil-fuel-peak-coming/

[5] "Why Peabody Energy, the world's largest coal company, just went bankrupt." Vox, April 13, 2016; "Coal played a part in 'big five' energy firms losing €100bn in share value." Guardian, June 5, 2015; "Is any end in sight for power and utilities asset impairments in Europe?" EY, Aug. 27, 2018; "Energy companies wrote down nearly 8 billion barrels of Canadian oilsands reserves last year." Financial Post, June 12, 2017.

[6] "2020 vision: why you should see peak fossil fuels coming." Carbon Tracker, Sept. 10, 2018.

[7] "Oil & Gas-Oilfield Services Outlook: Struggle to Sustain." Zacks Equity Research, July 23, 2018; International Energy Agency (IEA), "World Energy Investments 2018." International Energy Agency; "Global steam turbine market to decline to $8.9bn by 2022." Power Technology, Aug. 29, 2018.

[8] https://www.nasdaq.com/articles/ford-to-cut-12000-jobs-in-europe-by-end-of-2020-2019-06-27

price forecast to USD 55/bbl from 70[9]. According to the company, this price reflects the current decline in demand but also the growing appetite of society to transition to lower carbon sources of energy. As an indication of anticipated higher costs of production in the future, BP also announced that it will implement an internal or shadow carbon price for all its projects, increasing to 100 USD/t of CO2 by 2030, from the 40 USD/t of Co2 that it currently uses.

In contrast, the demand for some low-/zero-carbon technologies is increasing as their costs fall. In many cases, the cost of renewable energy generation – wind, solar and geothermal – has already fallen to lower than traditional methods – coal, oil, gas and nuclear – at the utility scale.[10] Wind and solar power generation rose by 15% in 2019, generating 8% of the world's electricity.[11]

Globally, several cities have begun to mandate or create clear incentives for zero net-energy buildings,[12] vehicle-charging infrastructure[13] in every new build, and even solar panels on the roof[14] of every new home, such as in the case of California from 2020.

A similar trend has been observed in the automobile industry as well. Global carmakers have announced to invest over USD 300 billion in electric vehicle technology alone over the next five to 10 years.[15]

In order to limit the negative impact of global warming and climate change, in December 2015 in Paris, world leaders agreed to limit global warming to less than 2 degrees Celsius and pursue efforts to limit the temperature increase to 1.5 degrees Celsius.[16] This entails limiting future carbon emissions and a transition of the global economy from carbon-intensive operations and energy sources to zero- or low-carbon operations and energy sources.

[9] https://www.nytimes.com/2020/06/15/business/energy-environment/bp-oil-gas-write-down.html

[10] https://www.irena.org/publications/2019/May/Renewable-powergeneration-costs-in-2018

[11] https://ember-climate.org/wp-content/uploads/2020/03/Ember-2020GlobalElectricityReview-Web.pdf

[12] 8 https://ipeec.org/upload/publication_related_language/pdf/766.pdf

[13] https://www.mckinsey.com/industries/automotive-and-assembly/ourinsights/charging-ahead-electric-vehicle-infrastructure-demand

[14] https://www.latimes.com/business/realestate/hot-property/la-fi-solarmandate-20181214-story.html

[15] Reuters, Jan. 10 2019 "VW, China spearhead $300 billion global drive to electrify cars": https://uk.reuters.com/article/uk-autoshow-detroitelectric-exclusive/exclusive-vw-china-spearhead-300-billion-globaldrive-to-electrify-cars-idUKKCN1P40GI

[16] The Paris Agreement; https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

Institutional investors likely cannot afford to ignore climate change

The transition to a low carbon economy poses significant risks and opportunities for investors' portfolios. A migration of demand from a carbon-intensive company to a low- or zero-carbon product or service provider could alter the risk-return profile not only of individual companies but of some entire industries as well. The possibility of economic losses for carbon-intensive and carbon-dependent companies during a low-carbon transition scenario could adversely affect their attractiveness to institutional investors who wish to mitigate their climate-related risks (the companies may experience a reduction in sales, earnings or book value, for example).

Conversely, low- or zero-carbon companies could become more attractive to such investors if the demand for their services exceeds market expectations or an assessed lack of exposure to transition risks is borne out.

How to use this guide: A framework for simplifying the complexity

This guide is aimed at illustrating how equity and fixed income indexes can be a relevant tool for institutional investors in portfolio construction. It also aims to present how climate risk indexes may be used as part of an approach to manage climate-related risks and integrate them into the investment process.

With climate-related risks posing a potential threat to the long-term resilience of investment portfolios Using all tools available to investors and in particular equity and fixed income indexes may become even more relevant.

Common investor objectives around climate change

When developing a climate strategy, investors may have different objectives based on their investment strategy and time horizon. We have observed three main objectives that investors commonly tackle individually or combined as part of their climate strategy.

1. Mitigate transition risk

How could exposure to carbon-intensive and carbon-dependent companies and industries be reduced? How could stranded-asset risk and long-term environmental risks be managed?

Reducing exposure to carbon intensive activities and/or fossil fuel related activities is one way to reduce climate transition risks.

2. **Capture potential economic disruption and positive exposure**

   How could exposure to lower-carbon technologies and transition "solution" stocks be increased, respecting other investor constraints? This could mean increasing exposure to companies providing environmentally-friendly technologies and solutions.

3. **Promote stewardship**

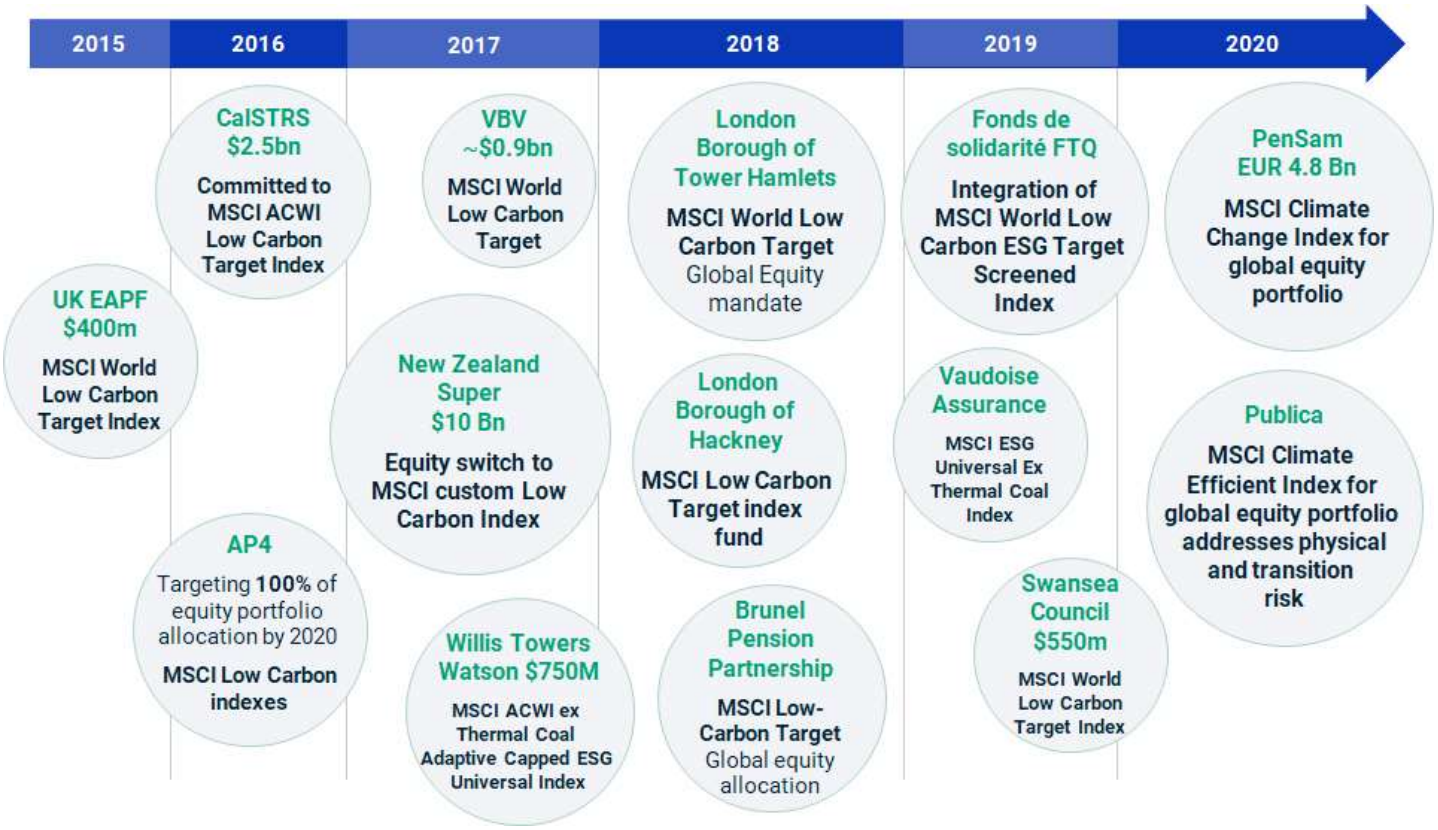
   Engagement with companies is increasingly important for active and passive managers alike. For those institutional investors adopting a climate-driven investment strategy, a consistent aspect is how to assess the scope to change behaviours in their existing investments, so those companies are better aligned with investors' take on the requirements of a low-carbon transition economy.

   Actions such as engaging with companies to encourage behavioural changes to improve operations and develop long term climate change strategies like incentives for better climate risk management.

How indexes can help address investors' climate objectives

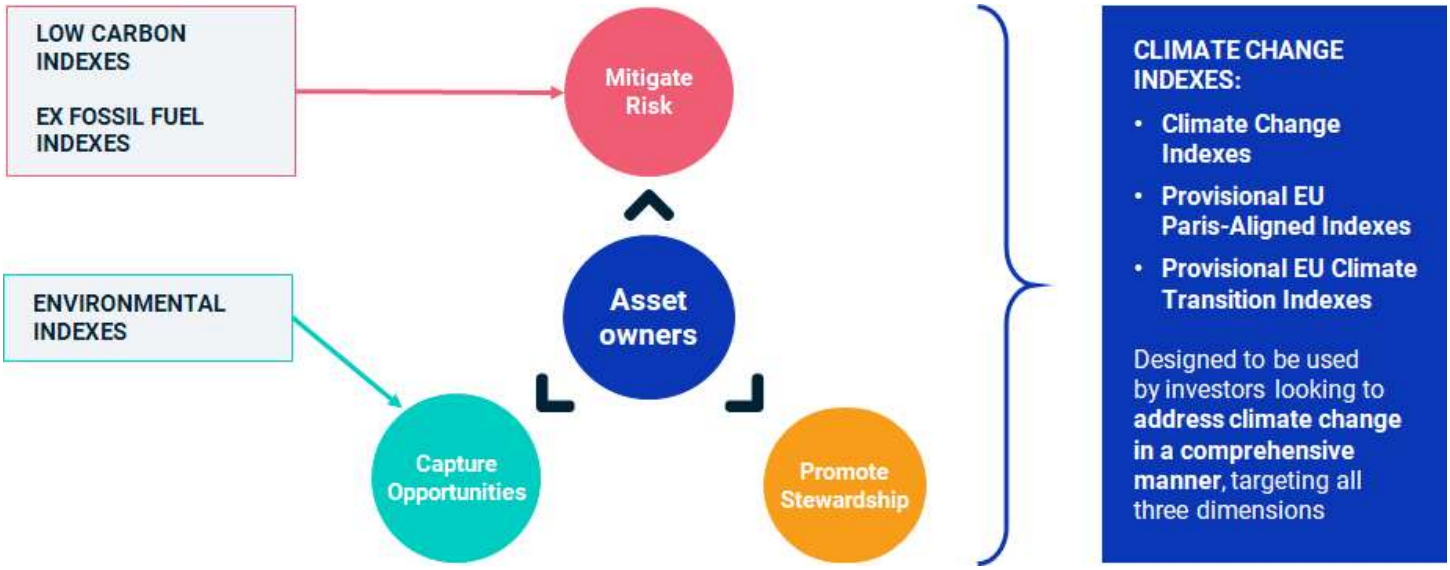
Over the past few years, we have seen growing interest from institutional investors globally in adopting climate indexes. This mostly emerged at the time of the COP 21 in Paris with the adoption of MSCI Low Carbon Indexes by EAPF, CalPERS and AP4. The Task Force on Climate-Related Financial Disclosure (TCFD) has amplified this interest. Investors have become more sophisticated in their thinking about climate risks and willing to incorporate other dimensions alongside reducing exposure to carbon stranded assets. These dimensions include capturing opportunities and encouraging companies to develop climate-resilient business models.

Exhibit 1: Asset Owner adoption of MSCI Climate Indexes



MSCI offers climate indexes for both equity and fixed income that aim to represent the main objectives of a climate strategy. Each of these objectives (with the exception of promoting stewardship) can be addressed separately by using indexes such as MSCI Low Carbon Indexes or MSCI Global Environment Indexes or combined with the use of MSCI Climate Change Indexes.

Exhibit 2: MSCI Climate Indexes



Risk mitigation – index options

Investors focused on mitigating risk may wish to adopt indexes that limit constituent carbon emissions and avoid companies with fossil fuel related activities address.

Low carbon indexes: MSCI's Low Carbon Indexes overweight companies with low carbon emissions relative to sales and those with low-potential carbon emissions per dollar of market capitalization, relative to the parent index. This approach aims to keep carbon emissions to a minimum while also targeting a low tracking error relative to the parent index.

Ex Fossil Fuel indexes: MSCI's ex Coal Indexes and ex Fossil Fuels Indexes exclude companies with fossil fuel reserves exposure. The MSCI ex Coal indexes exclude companies that have proven and probable coal reserves used for energy purposes. The MSCI ex Fossil Fuels Indexes exclude coal reserves and/or oil and natural gas reserves used for energy purposes.

Opportunities – index options

Environmental Indexes: Some investors may wish to gain greater exposure to companies supporting the transition to a low-carbon economy and capture the upside of a transition to a low carbon economy. They may adopt indexes designed to target companies that focus on offering products or services that contribute to a more environmentally sustainable economy (by making a more efficient use of limited global natural resources). For example, MSCI Global Environment Index

identifies companies operating in Alternative (Renewable) Energy, Energy Efficiency, Sustainable Water, Green Building and Pollution Prevention sectors. Our approach is to include companies that derive 50% or more of their revenue cumulatively from these five cleantech themes.

Holistic options: New generation of climate indexes

More recently, MSCI has launched a new generation of climate indexes aiming to address climate change in a more comprehensive manner, targeting all three objectives (i.e., risk, opportunities and stewardship). These indexes rely on the Low Carbon Transition (LCT) Score and Categories from MSCI ESG Research to reweight constituents of a parent index. Securities offering solutions to the transition will see their weight increase while securities facing transition risks will see their weight decreased in the index compared to its parent benchmark. Such indexes can be unconstrained like MSCI Climate Change Index or include specific constraints to be compliant with the recommendations form the EU Technical Expert Group such as MSCI Climate Transition benchmark" (CTB) and "EU Paris-Aligned Benchmark" (PAB) These new benchmarks aim to help investors hedge against climate transition risks but also have the scope to direct their investments towards opportunities related to the energy transition to align with the trajectory of the Intergovernmental Panel on Climate Change's 1.5-degree scenario. In particular both PAB and CTB include in their construction a self-decarbonization aspect whereby the carbon footprint of both indexes will be reduced by 7% per annum using the IPPC scenario "1.5°C with no or limited overshoot".[17]

[17] https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/190930-sustainable-finance-teg-final-report-climate-benchmarks-and-disclosures_en.pdf

Exhibit 3: MSCI Climate Indexes characteristics summary compared to market capitalization-based indexes

Index	Objectives	Methodology	% of stocks vs parent	Carbon Intensity Reduction[18]	Fossil Fuel Reserves [19]Reduction	Cleantech solutions (≥20% revenues)[20]
Ex-Fossil Fuel	Mitigate risks	Exclusion	92.64%	28.50%	100.00%	4.90%
Low Carbon	Mitigate risks	Optimization/ Exclusion	68.44%	76.64%	92.24%	4.90%
Cleantech	Capture opportunities	Selection	2.57%	-2.83%	100.00%	8.80%
Climate Change	Mitigate risks, capture opportunities, promote stewardship	Reweighting	96.15%	43.93%	80.68%	4.90%

Source: MSCI, as of June 30, 2020. Note that the Global Environment Index is based on the MSCI ACWI IMI.

[18] Efficiency of a portfolio tracking the index in terms of total Scope 1 and Scope 2 carbon emissions divided by total sales. (Unit: tons of CO2/ million $ of sales)

[19] Carbon potential emissions normalized for the size of the portfolio tracking the index. (Unit: tons of CO2/ million $ invested)

[20] Exposure to companies that derive 20% or more revenue from any of the five clean tech themes including alternative energy, energy efficiency, green building, pollution prevention, or sustainable water.

Climate Change Index methodology

MSCI Climate Change Indexes are part of a holistic toolkit to enable clients to build more climate-resilient portfolios. They are generally designed to represent the performance of a strategy that reweights securities based upon the opportunities and risks associated with the transition to a low carbon economy, enabling institutional investors and wealth managers to integrate climate risk considerations in their global equity investment process. They include three indexes : 1. MSCI Climate Change Index, 2. MSCI Paris Aligned Benchmark (PAB) and 3. MSCI Climate Transition Benchmark (CTB). MSCI Climate Change Index is an unconstrained Index which is used as the parent for both the PAB & the CTB. PAB & CTB pursue a similar objective to meet the Paris Agreement but vary in their pace to achieve this objective. For example, the PAB will apply fossil fuels related exclusions and aim to have a carbon footprint reduction of at least 50% while the CTB will underweight companies involved in fossil fuels and target a 30% carbon footprint reduction.

All three indexes use the Low Carbon Transition Score as a key input into the methodology.

Low Carbon Transition Score

The Low Carbon Transition Score measures a company's absolute exposure to Low Carbon Transition risks and opportunities. It is designed to identify potential leaders and laggards by holistically measuring companies' exposure to and management of risks and opportunities related to the low carbon transition. It includes a full assessment of a company's carbon footprint (i.e., scope 1, 2, 3 and avoided emissions) and forward-looking analysis (i.e., company targets). The score is available for 8,500+ companies, which makes it suitable for index construction.

Exhibit 4: Low Carbon Transition Categories and Industry Exposures

LOW CARBON TRANSITION SCORE	LOW CARBON TRANSITION CATEGORY		LOW CARBON TRANSITION RISK/ OPPORTUNITY	EXAMPLES
SCORE = 0	**ASSET STRANDING** *(less than 1% of ACWI IMI by weight*)*		Potential to experience "stranding" of physical/ natural assets due to regulatory, market, or technological forces arising from low carbon transition.	Coal mining & coal based power generation; Oil sands exploration/production
	TRANSITION	**PRODUCT** *(about 10% of ACWI IMI by weight*)*	Reduced demand for carbon-intensive products and services. Leaders and laggards are defined by the ability to shift product portfolio to low-carbon products.	Oil & gas exploration & production; Petrol/diesel based automobile manufacturers, thermal power plant turbine manufacturers etc.
		OPERATIONAL (about *10% of ACWI IMI by weight*)*	Increased operational and/or capital cost due to carbon taxes and/or investment in carbon emission mitigation measures leading to lower profitability of the companies.	Fossil fuel based power generation, cement, steel etc.
	NEUTRAL *(about 75% of ACWI IMI by weight*)*		Limited exposure to low carbon transition carbon risk. Through companies in this category could have exposure to physical risk and/or indirect exposure to low carbon transition risk via lending, investment etc.	Consumer staples, healthcare, etc.
	SOLUTIONS *(less than 5% of ACWI IMI by weight*)*		Potential to benefit through the growth of low-carbon products and services.	Renewable electricity, electric vehicles, solar cell manufacturers etc.

The Low Carbon Transition Categories and Scores are determined by a combination of each company's current risk exposure and its efforts to manage the risks and opportunities presented by the low-carbon transition.

Exhibit 5: Steps to determine Low Carbon Transition Categories and Scores

Source: MSCI

MSCI Climate Change Index Methodology

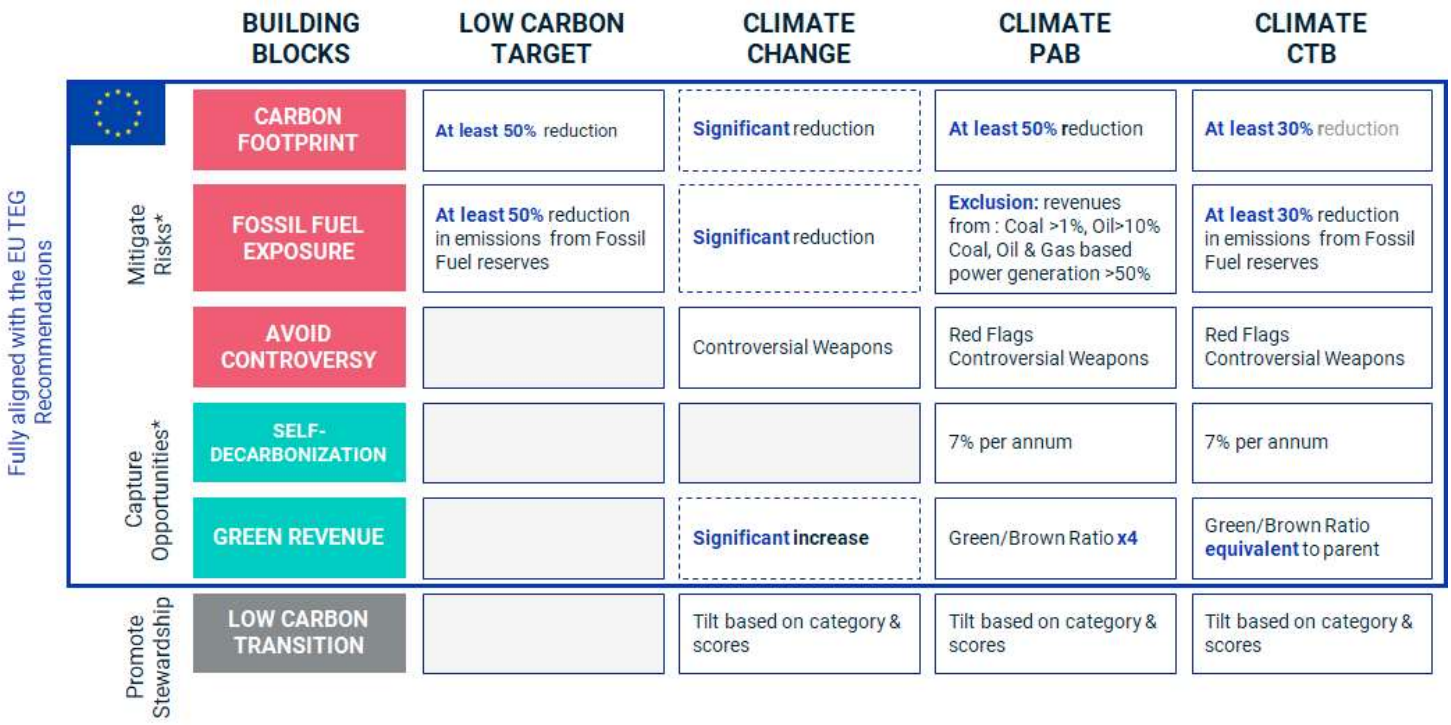
The MSCI Climate Change Indexes use a reweighting approach: Within each index, the constituents of the parent index are reweighted between and within Low Carbon Transition (LCT) Categories using their LCT Score. Securities with high LCT score (e.g. companies classified under the solution category) will see their weight increase while securities with low LCT score (e.g. companies classified under the asset stranding category) will see their weight decrease.

Using the MSCI Climate Change Index, it is also possible to apply various constraints (e.g. carbon footprint reduction, self-decarbonization etc.), allowing investors to take into account the minimum requirements from the EU Technical Expert Group. The addition of the constraints will create the Paris Aligned Benchmark as well as the Climate Transition Benchmark, which are both using MSCI Climate Change Index as their parent index.

As highlighted in the table below, MSCI Climate Indexes include a range of indexes (i.e. Low Carbon, Ex Fossil Fuels, Global Environment, Climate Change, PAB & CTB) which differ in key features. First, their objectives vary: the MSCI Low Carbon indexes for example mostly focus on risk mitigation while Climate Change Indexes including PAB and CTB also aim to identify opportunities and promoting stewardship. Second, PAB and CTB have fixed constraints while MSCI Climate Change indexes aim at improving the same features without putting a fixed target. Lastly, they may differ in the implementation path. While PAB and CTB pursue a similar objective, which is to

be aligned with the Paris Agreement, they vary in how they aim at achieving this goal. For example, the PAB will aim at reducing the carbon footprint by 50% while the CTB will target a minimum of 30% reduction.

Exhibit 6: Key features of MSCI Climate Benchmarks



BUILDING BLOCKS	LOW CARBON TARGET	CLIMATE CHANGE	CLIMATE PAB	CLIMATE CTB
CARBON FOOTPRINT	**At least 50%** reduction	**Significant** reduction	**At least 50%** reduction	**At least 30%** reduction
FOSSIL FUEL EXPOSURE	**At least 50%** reduction in emissions from Fossil Fuel reserves	**Significant** reduction	**Exclusion:** revenues from : Coal >1%, Oil>10% Coal, Oil & Gas based power generation >50%	**At least 30%** reduction in emissions from Fossil Fuel reserves
AVOID CONTROVERSY		Controversial Weapons	Red Flags Controversial Weapons	Red Flags Controversial Weapons
SELF-DECARBONIZATION			7% per annum	7% per annum
GREEN REVENUE		**Significant increase**	Green/Brown Ratio **x4**	Green/Brown Ratio **equivalent** to parent
LOW CARBON TRANSITION		Tilt based on category & scores	Tilt based on category & scores	Tilt based on category & scores

MSCI Climate Change Indexes – Key Financial Metrics

MSCI Climate Change Indexes including PAB & CTB are designed to be broad and diversified, have moderate tracking-error to their parent indexes, and avoid large active region, country, sector, factor or asset exposures versus a market cap-weighted parent index. They have experienced reasonably low levels of turnover in the limited backtest period that we analyzed.[21]

Exhibit 7: Key financial metrics of MSCI Climate Benchmarks

	MSCI ACWI Index	MSCI ACWI Climate Change Index	Provisional ACWI CTB	Provisional ACWI PAB	MSCI ACWI Low Carbon Target Index
Total return* (%)	6.8	7.9	8.1	8.3	6.9
Total risk (%)	13.3	13.2	13.1	13.1	13.4
Return / risk	0.51	0.60	0.62	0.63	0.52
Sharpe ratio	0.44	0.54	0.55	0.57	0.45
Active return (%)	0.0	1.1	1.3	1.5	0.1
Tracking error (%)	0.0	1.0	1.1	1.3	0.4
Information Ratio	nan	1.14	1.16	1.16	0.29
Historical beta	1.00	0.98	0.98	0.98	1.00
Number of constituents***	2601	2445	2401	2279	1764
Turnover** (%)	2.2	4.2	5.6	6.1	14.5
Price to book***	2.2	2.3	2.4	2.4	2.2
Price to earnings***	18.4	18.4	18.7	18.8	18.2
Dividend yield*** (%)	2.5	2.4	2.4	2.3	2.5

Period: Nov 29, 2013 to Jun 30, 2020. * Gross returns annualized in USD ** Annualized one-way index turnover over index reviews *** Monthly averages

[21] The Information may contain back tested data. Back-tested performance is not actual performance, but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.

Exhibit 8: Key environmental metrics of MSCI Climate Benchmarks as of June 30, 2020

Examples of companies whose weight have been increased in the MSCI Climate Change Index include Intel Corp, a manufacturer of semiconductor computer circuits which is classified as a solution company according to MSCI Low Carbon Transition assessment. Intel saw a 270% increase in weight to 1.58% in the ACWI PAB Index compared to the 0.55% in the parent MSCI ACWI Index as of Feb 2020. Examples of companies whose weight has been decreased in the MSCI Climate Change Index include Nestlé, whose weight was reduced by 20% to 0.55% in the ACWI PAB Index compared to the 0.64% in the parent MSCI ACWI Index by February 2020. Nestle is classified under the operation transition category of the LCT assessment.

Use Cases for MSCI Climate Change Indexes

Investors have used the MSCI Climate Indexes in various situations to support their portfolio construction:

- **Policy or strategic benchmark:** Use of MSCI Climate Change Indexes as a policy benchmark to evaluate performance of asset allocation strategies.
- **Performance benchmark:** Use of MSCI Climate Change Indexes to gauge performance of active investment strategies.
- **Overlay strategies:** Use of the MSCI Climate Change Index methodology in connection with an overlay strategy for other portfolio strategies (ESG-based or otherwise). An overlay tracking an MSCI Climate Change Index could potentially distribute some of the weight of an underlying strategy away from companies exposed to climate-related risk and in favor of companies more exposed to climate-related opportunities.
- **Index underlying ETFs and other traded products:** MSCI Climate Change Indexes can serve as the index for ETFs, and other financial products.
- **Engagement tool:** MSCI Climate Change Indexes can serve as a tool to help investors engage with invested companies. The LCT Category and LCT Scores from MSCI ESG Research provide a quantitative, transparent assessment of companies on their climate-related risk management. The LCT Score is transparent as to the actions required to achieve this.

Examples of use cases

Brunel Pension Partnership (UK) – MSCI Low Carbon Target

Brunel Pension Partnership Limited is one of eight UK Local Government Pension Scheme Pools and manages investments for ten pension funds. They use the MSCI World Low Carbon Index for a portion of their global equity allocation. They use the MSCI World Low Carbon. With the adoption of the MSCI World Low Carbon Index, Brunel aims to significantly reduce its carbon footprint through lower exposure to high-carbon emitters and companies with fossil fuel reserves.[22]

Publica (Switzerland) – MSCI Custom Climate Index

The Swiss Federal Pension Fund PUBLICA decided to use a customized “climate efficient index “to further enhance the management of climate-related opportunities and risks in its investments. Their objectives are to achieve a significant reduction of

[22] https://www.brunelpensionpartnership.org/wp-content/uploads/2020/06/Brunel-2020-Responsible-Investment-and-Stewardship-Outcomes-Report.pdf

climate-related risks in their equity strategy while capitalizing on opportunities associated with climate change. They are not only focusing on climate transition risks but also on physical risks while using the following MSCI climate metrics [23]in the index methodology:

- Policy Risk Climate VaR
- Technology Opportunities Climate VaR
- Extreme Weather Climate VaR
- Low Carbon Transition Score

By design, the climate index targets a significant improvement in each climate parameter (between 30 to 50%) and can be used in combination with Publica's existing factor strategy.

Pens am (Denmark) - MSCI Climate Change Index

Danish labour market pension fund PenSam adopted the MSCI Climate Change Index as its official benchmark in 2020. They decided to adopt the MSCI ACWI Climate Change Index for its whole €4.8bn equity allocation as the methodology relies on a reweighting approach which considers both climate-related risks and opportunities. Using MSCI Low Carbon Transition score as a key input into the index construction allowed Pensam to address climate change in a holistic manner.

[23] https://www.msci.com/climate-data-and-metrics

EU Sustainable Finance Action plan: A new era of climate indexes and index-based products

Background

In February 2019, a political agreement was reached between the European Council and the European Parliament to create a new category of financial benchmarks. This regulation was one of the first to be adopted as part of the European Sustainable Finance Action plan.[24]

The regulation includes

Greater transparency on ESG integration for benchmark providers:

1. ESG information in benchmark statement
2. Reporting on Paris Alignment for all benchmarks

The creation of two benchmarks focusing on climate change:

1. EU Climate Transition Benchmarks
2. EU Paris-Aligned Benchmarks

On September 2019, the Technical Expert Group (TEG), which MSCI is part of, published its final report including recommendations for the methodologies of the "EU Climate Transition" and "EU Paris Aligned Benchmarks" as well as suggestions on a set of ESG metrics to be disclosed by index providers. This report will serve as a basis for the EU Commission for drafting the delegated acts expected in April 2019 amending Regulation (EU) 2016/2011.[25]

[24] https://www.unpri.org/sustainable-financial-system/explaining-the-eu-action-plan-for-financing-sustainable-growth/3000.article

[25] https://ec.europa.eu/info/publications/sustainable-finance-teg-climate-benchmarks-and-disclosures_en

ESG disclosure requirements for all benchmarks:[26]

Benchmark administrators are required to comply with ESG disclosure guidelines by April 30, 2020 and disclose ESG information for all benchmarks with the exception of currency and interest rate benchmarks. The objective of this requirement is to enhance transparency of benchmark methodologies as well as allow for greater comparability among indexes for investors. Requirements include disclosure in methodologies as well as in benchmark statements with a set of metrics that differ by asset class.

On April 30, 2020, MSCI released ESG metrics for more than 40,000 indexes based on the recommendations from the TEG Final Report issued in September 2019 (see examples in Appendix).

The creation of two benchmarks focusing on climate change:

The main objectives laid out by the EU for defining the new climate benchmarks are to:

1. Allow a significant level of comparability of climate benchmarks methodologies while leaving benchmarks' administrators with an important level of flexibility in designing their methodologies
2. Provide investors with an appropriate tool that is aligned with their investment strategy
3. Increase transparency on investors' impact, specifically with regards to climate change and the energy transition
4. Disincentivise greenwashing.

[26] https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/190930-sustainable-finance-teg-final-report-climate-benchmarks-and-disclosures_en.pdf

Conclusion

The world is evolving rapidly due to dramatic and significant shifts in climate change as well as social, institutional governance and technological innovation. We believe the convergence of these factors may lead to a large-scale reallocation of capital over the decades to come. Investors who continue to ignore these factors could find themselves unprepared for the possible resulting changes.

The demand for a set of tools that can help investment institutions manage emerging opportunities and inherent risks associated with climate considerations through index adoption both on the equity and on the fixed income side has never been greater in their pursuit of long-term, sustainable and inclusive investment performance.

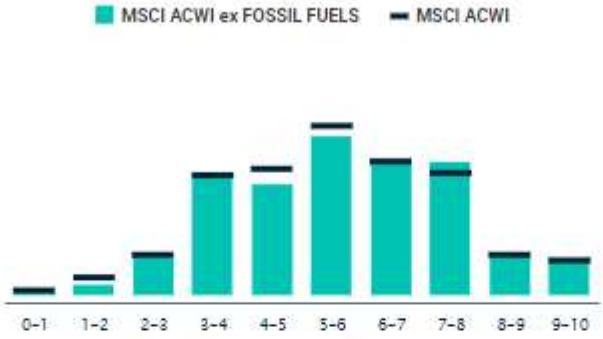
APPENDIX I - MSCI Climate Indexes Methodologies

	Ex Fossil Fuel Index	Low Carbon Target Index	Climate Change Index	EU Provisional Climate Change Paris Aligned	Global Environment
Objective	Reduce fossil fuel reserves exposure	Mitigate stranded asset risk, reduce carbon footprint, maintain market index like financial characteristics	Mitigate climate risks and capture disruptive technology	Reweights securities to capture opportunities, mitigate risks associated with the climate transition risks and opportunities - as per the TEG Final Report	High exposure to environmental impact themes
Index Review	Quarterly	Semi-annual	Semi-annual	Semi-annual	Quarterly
Weighting	Market cap	Optimized	Weight Tilt - Combined Score = Category Tilt Score * Relative Tilt Score	Weight Tilt	Market cap
Details		• Minimize the carbon exposure with a Tracking Error target of 30 bps vs Market Cap index • Turnover constraint: < 10% semi-annual • Sector constraints: < 2% under- or over-weight • Country constraints: < 2% under- or over-weight • Securities with extremely low weight post optimization are deleted	• Re-Weighting based on LCT Category: • Solutions = 3x • Neutral = 1x • Operational Transition = 0.6667x • Product Transition = 0. 3x • Asset Stranded = 0.16x • Relative Score reflects company LCT vs category peers • Relative Scores < 0.5 are capped at 0.5	• Using Climate Change as starting point + • 50% carbon intensity reduction • 7% YoY decarbonization • Increase (x4) exposure to green revenues • Maintain exposure to sectors highly exposed to climate change issues similar vs market cap index	Selects companies which derives 50% or more of their revenue cumulatively from the six Environmental Impact themes
Ineligible Companies	Companies that have proved & probable coal reserves and/or oil and natural gas reserves used for energy purposes are excluded		• Controversial Weapons • Companies with missing Low Carbon Transition Score1 or Category	• Controversial Weapons • Very Severe Controversies • Coal (1%+ revenues) • Oil & Gas (10%+ revenues) • Coal, Oil & Gas based power generation (50% + revenues)	• Controversial Weapons • Very Severe Controversies

APPENDIX II - ESG Disclosure pursuant to the EU Benchmark Regulation

MSCI ACWI Ex Fossil Fuel

2. Environmental factors



Consolidated Environmental Rating - Distribution

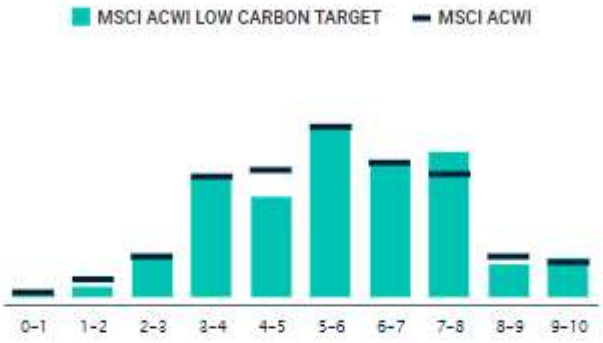
MSCI ACWI ex FOSSIL FUELS	Score	Coverage %
Consolidated Environmental Rating	5.7	100.0%
Carbon Intensity	46	99.6%
Reported Emissions %	78.4%	N/A
Estimated Emissions %	21.2%	N/A
Fossil Fuel Sector Exposure %	5.3%	99.8%
Fossil Fuel Reserves % (*)	0.0%	99.8%
Green Revenues %	3.7%	99.9%
Exposure Climate-Related Physical Risks	-6.5%	79.7%

MSCI ACWI	Score	Coverage %
Consolidated Environmental Rating	5.6	99.8%
Carbon Intensity	68	99.5%
Reported Emissions %	77.9%	N/A
Estimated Emissions %	21.6%	N/A
Fossil Fuel Sector Exposure %	10.5%	99.7%
Fossil Fuel Reserves % (*)	5.6%	99.7%
Green Revenues %	3.6%	99.9%
Exposure Climate-Related Physical Risks	-6.5%	80.0%

(*) Additional ESG factor not required by the TEG final report but provided for transparency purposes

MSCI ACWI Low Carbon Target

2. Environmental factors



Consolidated Environmental Rating - Distribution

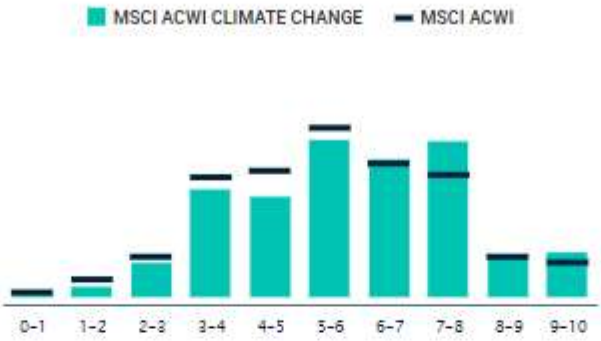
MSCI ACWI LOW CARBON TARGET	Score	Coverage %
Consolidated Environmental Rating	5.7	99.9%
Carbon Intensity	16	99.4%
Reported Emissions %	77.5%	N/A
Estimated Emissions %	22.0%	N/A
Fossil Fuel Sector Exposure %	7.8%	99.7%
Fossil Fuel Reserves % (*)	2.6%	99.7%
Green Revenues %	3.7%	99.8%
Exposure Climate-Related Physical Risks	-6.3%	81.2%

MSCI ACWI	Score	Coverage %
Consolidated Environmental Rating	5.6	99.8%
Carbon Intensity	68	99.5%
Reported Emissions %	77.9%	N/A
Estimated Emissions %	21.6%	N/A
Fossil Fuel Sector Exposure %	10.5%	99.7%
Fossil Fuel Reserves % (*)	5.6%	99.7%
Green Revenues %	3.6%	99.9%
Exposure Climate-Related Physical Risks	-6.5%	80.0%

(*) Additional ESG factor not required by the TEG final report but provided for transparency purposes

MSCI ACWI Climate Change

2. Environmental factors



Consolidated Environmental Rating - Distribution

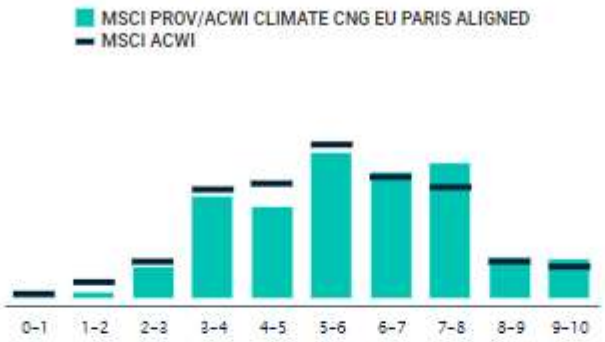
MSCI ACWI CLIMATE CHANGE	Score	Coverage %
Consolidated Environmental Rating	5.9	100.0%
Carbon Intensity	36	99.8%
Reported Emissions %	78.5%	N/A
Estimated Emissions %	21.2%	N/A
Fossil Fuel Sector Exposure %	4.8%	100.0%
Fossil Fuel Reserves % (*)	2.1%	100.0%
Green Revenues %	5.3%	100.0%
Exposure Climate-Related Physical Risks	-6.8%	83.8%

MSCI ACWI	Score	Coverage %
Consolidated Environmental Rating	5.6	99.8%
Carbon Intensity	68	99.5%
Reported Emissions %	77.9%	N/A
Estimated Emissions %	21.6%	N/A
Fossil Fuel Sector Exposure %	10.5%	99.7%
Fossil Fuel Reserves % (*)	5.6%	99.7%
Green Revenues %	3.6%	99.9%
Exposure Climate-Related Physical Risks	-6.5%	80.0%

(*) Additional ESG factor not required by the TEG final report but provided for transparency purposes

MSCI Provisional ACWI Climate Change EU Paris Aligned Benchmark

2. Environmental factors



Consolidated Environmental Rating - Distribution

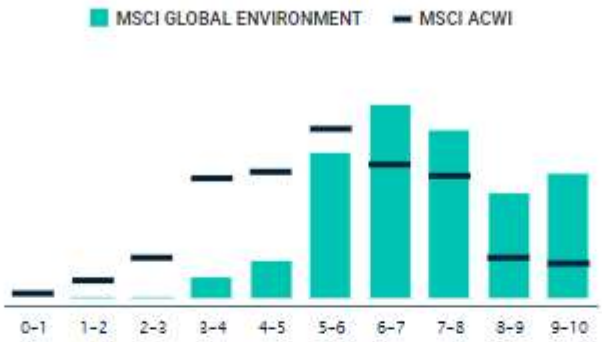
MSCI PROV/ACWI CLIMATE CNG EU PARIS ALIGNED	Score	Coverage %
Consolidated Environmental Rating	5.9	100.0%
Carbon Intensity	34	99.8%
Reported Emissions %	78.2%	N/A
Estimated Emissions %	21.5%	N/A
Fossil Fuel Sector Exposure %	4.1%	100.0%
Fossil Fuel Reserves % (*)	1.3%	100.0%
Green Revenues %	5.6%	100.0%
Exposure Climate-Related Physical Risks	-6.7%	83.4%

MSCI ACWI	Score	Coverage %
Consolidated Environmental Rating	5.6	99.8%
Carbon Intensity	68	99.5%
Reported Emissions %	77.9%	N/A
Estimated Emissions %	21.6%	N/A
Fossil Fuel Sector Exposure %	10.5%	99.7%
Fossil Fuel Reserves % (*)	5.6%	99.7%
Green Revenues %	3.6%	99.9%
Exposure Climate-Related Physical Risks	-6.5%	80.0%

(*) Additional ESG factor not required by the TEG final report but provided for transparency purposes

MSCI Global Environment Index

2. Environmental factors



Consolidated Environmental Rating - Distribution

MSCI GLOBAL ENVIRONMENT	Score	Coverage %
Consolidated Environmental Rating	7.1	89.9%
Carbon Intensity	48	99.5%
Reported Emissions %	40.3%	N/A
Estimated Emissions %	59.3%	N/A
Fossil Fuel Sector Exposure %	6.6%	100.0%
Fossil Fuel Reserves % (*)	1.0%	100.0%
Green Revenues %	75.0%	100.0%
Exposure Climate-Related Physical Risks	-3.6%	76.5%

MSCI ACWI	Score	Coverage %
Consolidated Environmental Rating	5.6	99.8%
Carbon Intensity	68	99.5%
Reported Emissions %	77.9%	N/A
Estimated Emissions %	21.6%	N/A
Fossil Fuel Sector Exposure %	10.5%	99.7%
Fossil Fuel Reserves % (*)	5.6%	99.7%
Green Revenues %	3.6%	99.9%
Exposure Climate-Related Physical Risks	-6.5%	80.0%

(*) Additional ESG factor not required by the TEG final report but provided for transparency purposes

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