

# JPM Emerging Markets Fund

## UK Task Force on Climate-related Financial Disclosures Report

Reporting Period	Holdings Date	Holding Size AuM <sup>1</sup>
01 Jan 2024 - 31 Dec 2024	31 Dec 2024	USD 2,788M





This report is designed to provide investors with transparency into the portfolio's climate-related risks and opportunities according to the Financial Conduct Authority (FCA) Environmental, Social and Governance (ESG) Sourcebook and the Task Force on Climate-related Financial Disclosures (TCFD) Recommendations. Where there are any material deviations in this report from the TCFD Recommendations, they shall be clearly explained in the UK entity report.

<https://am.jpmorgan.com/content/dam/jpm-am-aem/global/en/sustainable-investing/uk-tcf-d-report.pdf>



The report includes carbon exposure metrics and, for certain asset classes, forward looking climate risk metrics, which are designed to provide investors with information that can help understand the portfolio's potential performance in the future and in different climate-related scenarios, as required by the FCA and TCFD Recommendations.

To understand more about how J.P. Morgan Asset Management (JPMAM) considers climate-related risks and opportunities in the assets we manage on behalf of our clients, please refer to our Global TCFD report.

<https://am.jpmorgan.com/content/dam/jpm-am-aem/global/en/sustainable-investing/tcf-d-report.pdf>

Greenhouse Gas (GHG) Emissions Metrics <sup>2</sup>		Portfolio
	<b>Scope 1 GHG Emissions (Tons CO<sub>2</sub>e)</b> Direct GHG emissions occur from sources that are owned or controlled by the company. For example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.	234K
	<b>Scope 2 GHG Emissions (Tons CO<sub>2</sub>e)</b> Indirect GHG emissions resulting from the consumption of purchased electricity, heat or steam. Scope 2 emissions physically occur at the generation facility	38K
	<b>Scope 3 GHG Emissions (Tons CO<sub>2</sub>e)</b> Indirect GHG emissions resulting from the value chain of the company occurring either before (upstream) or after (downstream) the company's activities. The GHG protocol separates those emissions into 15 sub-categories	1M
	<b>Total Financed GHG Emissions (Tons CO<sub>2</sub>e)</b> The absolute greenhouse gas emissions associated with a portfolio Scope 1+2 Scope 1+2+3	272K 1M

Source: S&P Global Sustainable1, S&P Trucost Limited © Trucost [2024]. Portfolio Coverage 98.6%. Portfolio coverage for Scope 3 emissions may vary marginally from that of Scope 1 and 2 due to differences in estimation methods and reporting standards. GHG emissions are allocated based on Enterprise Value Including Cash (EVIC) approach. Refer to Appendix: GHG Emissions and Carbon Metrics (i, ii, iii, iv, v) for further information.

Carbon Metrics <sup>3</sup>		Portfolio
	<b>Carbon Footprint (Tons CO<sub>2</sub>e/USD mn invested)</b> Total carbon emissions for a portfolio normalised by the market value of the portfolio Scope 1+2 Scope 1+2+3	102 430
	<b>Weighted Average Carbon Intensity (WACI) (Tons CO<sub>2</sub>e/USD mn sales)</b> Portfolio's exposure to carbon-intensive companies Scope 1+2 Scope 1+2+3	363 1291

Source: S&P Global Sustainable1, S&P Trucost Limited © Trucost [2024]. Portfolio Coverage 98.6%. Portfolio coverage for Scope 3 emissions may vary marginally. Refer to Appendix: GHG Emissions and Carbon Metrics (iv, v, vi) for more information on portfolio coverage calculation.

<sup>1</sup> Holdings as at report date unless otherwise stated. Reproduced by permission.

<sup>2</sup> Scope 3 Emissions provided here may not fully reflect future realised value and are subject to measurement uncertainties and should not be construed to represent any belief regarding materiality or financial impact.

<sup>3</sup> This document responds to regulatory obligations. The GHG emissions and carbon metrics disclosed here represent an aggregation of issuer level data across the portfolio and should not be considered as performance indicators within the portfolio and may not be taken into account in the management of the portfolio.

This page of the report provides a qualitative analysis of Orderly Transition, Disorderly Transition and Hothouse World scenarios, and a discussion of the most significant drivers of impact on this TCFD product. It considers potential impacts based on the material exposure of the underlying portfolio holdings. On page 4 of this report, a quantitative analysis is provided using MSCI's Climate Value at Risk metric for Listed Equities and Corporate Bonds, and shows the distribution of the Climate Value at Risk in sectors which have high or concentrated exposure to carbon intensive sectors. This qualitative analysis and quantitative analysis are separate and should not be interpreted as based upon the other.

### Region

Emerging markets are typically more vulnerable to climate-related risks than developed markets due to several factors, including: (a) economic reliance and exposure to commodity extraction, or energy intensive manufacturing and industry which have higher potential impact from transition risks as client demand changes, e.g. autos and auto parts; (b) vulnerability to physical risks due to their location, for example in flood or drought-prone regions, and lower resilience to these hazards, which can damage infrastructure and disrupt supply chains; and (c) limited financial resources to invest in climate adaptation and mitigation measures as they transition to low carbon economies. As a result, companies operating in emerging markets may be more severely impacted by climate-related risks.

### Orderly – Transition Risks

The Orderly Transition scenario assumes that global temperature rise is limited to well below 2C as a result of increased regulation of fossil fuels and a gradual introduction of a carbon price that becomes higher over time. These changes have the potential to negatively affect companies that are reliant upon the use of fossil fuels, either in their own operations or their supply chains.

This product has material exposure in the Financial (Banks, Insurance, Financial Services) and IT (Software & Services, Technology Hardware & Equipment, and Semiconductors) sectors. Both of these sectors are less exposed to transition risks. The Financial sector has relatively low emissions from their operations (scope 1+2), and the main impacts are experienced through underlying exposure to companies which are engaged in carbon intensive sectors such as Industrials, Energy and Materials. For the IT sector, a key driver of impact could be the failure to create low-carbon products and improve energy efficiency within their manufacturing and supply chain operations. In both sectors there is also the potential for firms to experience increased reputational risk and regulatory burden if they don't substitute existing products and services with lower emissions options. This could in turn lead to loss of customers and a decrease in revenue.

### Disorderly – Transition Risks

In the Disorderly Transition scenario there are similar risk drivers to the Orderly Transition scenario, but due to delays or divergence in policy implementation across sectors and regions, the impacts are typically more severe. Within the Financial sector, banks could face a quicker deterioration of capital on their balance sheet if they hold a high proportion of companies or assets which are in carbon intensive sectors because the carbon price is expected to be much higher in the Disorderly Transition scenario. The carbon price is typically higher in the Disorderly scenario compared to the Orderly scenario in order to achieve a sharper reduction in emissions to keep global temperature rise to well below 2C. Within the IT sector, software or SaaS companies which have data centres requiring high levels of energy consumption could face greater transition risk in the Disorderly Transition scenario than in the Orderly Transition scenario if they don't transition to renewable energy sources.

### Transition Opportunities

Whilst we have so far discussed the transition risks that could be experienced in the product's material sector exposure, it is also worth pointing out that there are transition opportunities in both the Orderly and Disorderly Transition scenarios. The IT sector has the potential to take advantage of these opportunities, as the Internet of Things (IoT) and Artificial Intelligence (AI) technologies could help to better forecast network energy demands and measure energy consumption to reduce costs. In the Financial sector, firms that tap into new markets undergoing demand creation from climate change, such as the development of EVs or renewable energy technology, could benefit from financing these companies or from increased asset valuations.

### Hot House World – Physical Risks

In the Hot House World scenario transition risks are minimal as this scenario assumes that only current policies and Nationally Determined Contributions (NDCs) are implemented. As a result, efforts are insufficient to halt significant global warming and consequently changes in extreme weather and climate lead to high physical risk.

This product has material exposure to sectors which have relatively low impact from physical risk. Within the IT sector, companies that manufacture components for computers or smartphones may be negatively impacted by increased temperatures and water scarcity, as these processes require high quantities of water. Higher temperatures could also increase the need for air conditioning in order to retain suitable conditions for manufacturing processes, which would increase operating costs. The Financial sector is not expected to face high physical risks in direct operations, as these are not highly dependent on physical infrastructure and global supply chains. However, firms could face financial losses due to physical risks through loan and mortgage defaults or a decrease in asset prices due to extreme weather events such as storms and flooding.

**MSCI Implied Temperature Rise (ITR)<sup>4</sup>**

2.6°C

**What is the ITR metric?**

The ITR is a forward-looking portfolio alignment metric that is designed to quantify the expected global temperature rise if the portfolio (as constituted during the reporting period covered by the report) was representative of the economy as a whole. This metric can be used to consider how aligned a company or portfolio is to the Paris Agreement, whereby global temperature rise would be limited to 1.5°C or well below 2°C above pre-industrial levels.

**How does ITR relate to the UK TCFD requirements?**

The MSCI ITR metric is a portfolio alignment metric, and as such can show the climate warming scenario of the assigned portfolio and is designed to support reporting for TCFD Recommendation. For information on ITR calculations, please refer to Appendix: ITR section.

**How to interpret the ITR Banding**

The ITR band of a portfolio is based on the temperature range that the portfolio's ITR value falls into. The table categorises the ITR as either aligned or mis-aligned with the goals of the Paris Agreement. A portfolio may be mis-aligned because the underlying holdings are made up of companies that have high GHG emissions and do not have any de-carbonisation targets in place.

	Range (°C)	ITR Band	Description
Aligned	ITR Metric <= 1.5	1.5°C Aligned	This portfolio is in line with the Paris agreement's maximal objective of keeping global mean temperature to +1.5°C
	1.5 < ITR Metric <= 2.0	2°C Aligned	This portfolio meets the Paris Agreement's minimum objective of +2°C global mean temperature by the end of the century
Misaligned	2.0 < ITR Metric <= 3.2	Misaligned	This portfolio does not comply with the Paris agreement goals. Its pace of decarbonization is too slow to mitigate catastrophic climate change
	ITR Metric > 3.2	Strongly Misaligned	This portfolio's contribution to catastrophic climate change is higher than most portfolios

Source: MSCI

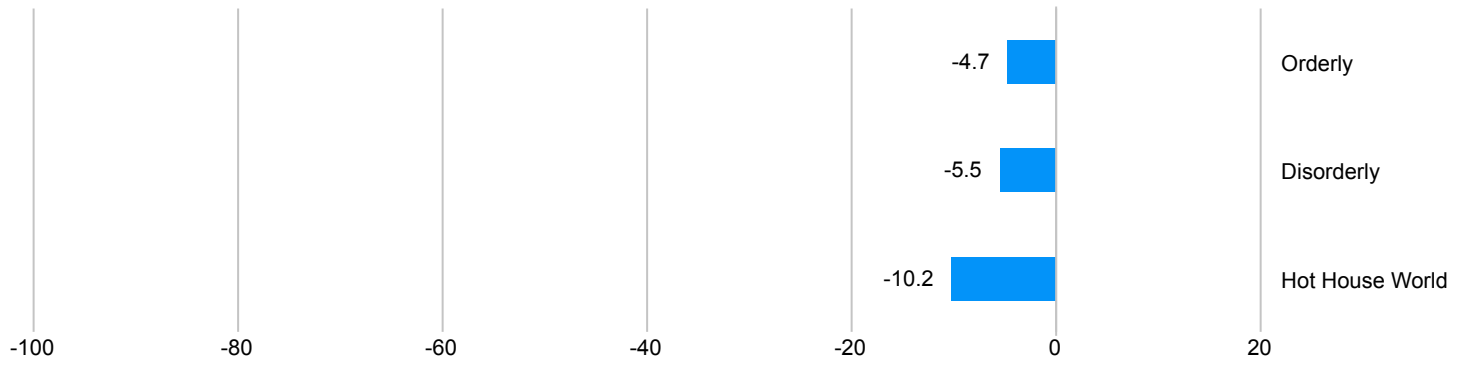
Portfolio Coverage 93.1% . Coverage across listed equities and corporate bonds only and is represented as the % of covered instrument types. For an example: A portfolio with 50 % sovereigns and 50 % IG bonds (corporate): 90% of the corporate provide data. Eligible assets = 50% \* Coverage = 45% (= 50% x 90%). For the eligible part of the portfolio JPMAM has set a threshold of 70% or more MSCI data coverage that is required for reporting Implied Temperature Rise. Blank values will be displayed, in cases where the covered product displays coverage below 70%, or where JPMAM does not currently have coverage from MSCI for the in-scope product (i.e. sovereigns). For further information on the MSCI methodology please refer to Appendix ITR.

Changes in ITR results from several updates made by MSCI to their methodology which may impact the comparability of data: (i) scenario benchmark has been updated from a 2°C-aligned 2070 net-zero scenario a 1.55°C-aligned 2050 net-zero scenario; (ii) changes in the pathways used from MSCI's in-house approach to NGFS net-zero 2050 pathways with increased sectoral differentiation and granularity on Scope 3; (iii) introducing a fixed 2019 carbon allocation baseline and adjusting remaining budget allowances based on changes in a company's market share and realized emissions over time; and (iv) introducing forecasts emissions at higher levels than stated by companies if their targets are considered to be lacking credibility.

MSCI notes that the impacts of the changes in the ITR model will vary by company and by sector, however, fewer companies would be expected to be 1.5°C-aligned.

<sup>4</sup> MSCI Implied Temperature Rise Model Update, February 2024. MSCI ITR metrics provided in this report may not fully reflect future realised value and are subject to measurement uncertainties and should not be construed to represent any belief regarding materiality or financial impact. ITR is being provided in this report for the purposes of complying with applicable ESG reporting requirements or policies.

**MSCI Climate Value-at-Risk (%)<sup>5</sup>**






**What is the Climate Value-at-Risk metric?**

Climate Value-at-Risk is designed to provide a forward-looking valuation assessment of a company or portfolio taking into account the climate related risks and opportunities faced under different climate scenarios. It is calculated as the % (percentage) change in a company’s market value between the present year and 2050 (transition risks and opportunities) or 2100 (physical risks), assuming that the scenario in question is realised.

**What are Orderly, Disorderly and Hot House World Scenarios?**

Each scenario explores a different set of assumptions for how climate policy, emissions and temperatures evolves. Comparing between scenarios can help show how the portfolio could be impacted under a different set of climate related risks and opportunities.

Scenario	Sector	Climate Value-at-Risk	Physical Risk	Policy Risk	Technology Opportunities
	Overall Sector	-4.7%	-2.5%	-2.3%	0.1%
	Carbon Intensive	-	-	-	-
	Non-Carbon Intensive	-	-	-	-
	Overall Sector	-5.5%	-2.5%	-3.1%	0.1%
	Carbon Intensive	-	-	-	-
	Non-Carbon Intensive	-	-	-	-
	Overall Sector	-10.2%	-8.4%	-1.9%	0.0%
	Carbon Intensive	-	-	-	-
	Non-Carbon Intensive	-	-	-	-

Source: MSCI

Portfolio Coverage 95.5% . Coverage across listed equities and corporate bonds only, and is represented as % of the instruments eligible for coverage

For an example: A portfolio with 50 % sovereigns and 50 % IG bonds (corporate); Eligible instruments = 100% Corporates. If 90% of the Corporates provide data then Coverage = 90% (= 100% x 90%).

For the eligible part of the portfolio JPMAM has set a threshold of 70% or more MSCI data coverage that is required for reporting Climate Value at Risk. Blank values will be displayed, in cases where the covered product displays coverage below 70%, or where JPMAM does not currently have coverage from MSCI for the in-scope product (i.e. sovereigns). For further information on the MSCI methodology please refer to Appendix Climate Value-at-Risk.

**How should investors interpret the Climate Value-at-Risk for their portfolio?**

The Climate Value-at-Risk calculation considers physical climate risk, policy risk and the potential technology opportunities arising from climate change. The table above provides a breakdown of the Climate Value-at-Risk disclosed in the bar chart above against each of these three categories. Outputs should be compared across the different scenarios presented, and users should consider the contribution to total Climate Value-at-Risk from the carbon intensive/not carbon intensive sectors and each of the impact drivers shown in the table. A negative value means that a company or portfolio will have a reduction in market value in the given scenario. Please refer to the Climate Scenario Analysis for more information on how the portfolio may be impacted by the scenarios.

**What are carbon intensive sectors?**

The TCFD makes reference to the following sectors as carbon intensive: energy, materials, industrials and real estate management. and the table above provides a breakdown of how the portfolio and its investments in carbon intensive sectors vs. other sectors, are expected to perform under the three climate scenarios set out.

<sup>5</sup>MSCI Overall Climate Value-at-Risk metrics provided in this report may not fully reflect future economic reality and are subject to measurement uncertainties resulting from limitations inherent in the nature and should not be construed to represent any belief regarding materiality or financial impact. Climate Value-at-Risk is being provided in this report for the purposes of complying with applicable ESG reporting requirements or policies.

**Appendix: GHG Emissions and Carbon Metrics**

- i. Carbon dioxide equivalent (CO<sub>2</sub>e) is a unit used to standardize the emissions of different greenhouse gases.
- ii. Financed emissions metrics are an absolute measure scaling with portfolio size, hence great care should be taken when comparing with the benchmark and interpreting any observed trends, as the metric will respond to changes in emissions and portfolio size.
- iii. The apportioning metric for ownership ratio can be based on either equity ownership (market capitalisation) or financing share (enterprise value). Enterprise Value including cash (EVIC) has been recommended by PCAF as the apportioning metric of choice and the TCFD has also recommended its use for listed equities, corporate bonds and business loans in its latest guidance on carbon metrics.
- iv. The % coverage represents the % of the holdings in the portfolio or benchmark which are eligible for reporting including equity, bonds, ETFs and sovereigns (real assets, private debt, currency and derivatives are currently not included for the purposes of carbon reporting). The Coverage % represents the following coverage methodology applied to the assets:
- 1) Instrument has reported issuer data provided by our external vendor S&P Trucost
  - 2) Issuer has provided an estimated value by S&P Trucost
  - 3) For cases where emissions information is not available from S&P Trucost, but where we have company revenue data, a company's carbon metrics will be derived from the average carbon intensity (tons CO<sub>2</sub>e/million USD in revenues) for the industry or sub-industry in which it operates. For companies with missing emissions and revenue data, the industry or sub-industry average carbon footprint is used instead.
- v. Scope 1 and Scope 2 GHG emissions are allocated to investors based on an enterprise value share (EVIC) approach. The current portfolio value is used to normalize the data.
- vi. Scope 1 and Scope 2 GHG emissions are allocated based on portfolio weights (the current value of the investment relative to the current portfolio value).

$$\text{Carbon Footprint} = \frac{\sum_i \left( I_i \times \text{Emissions}_i \times \frac{\text{Investment}_i}{\text{EVIC}_i} \right)}{\sum_i (I_i \times \text{Investment}_i)}$$

$$\text{Total Financed Carbon Emissions} = \sum_i \left( I_i \times \text{Emissions}_i \times \frac{\text{Investment}_i}{\text{EVIC}_i} \right)$$

$$\text{Weighted Average Carbon Intensity} = \sum_i \left( I_i \times \frac{\text{Investment}_i}{\text{AUM}} \times \frac{\text{Emissions}_i}{\text{Revenues}_i} \right)$$

$I_i$  is a scope marker, equal to 1 for assets in scope and with available (reported or estimated) data (0 otherwise)  
 $\text{Emissions}_i$  are the greenhouse gas emissions of company  $i$ , in tonnes of CO<sub>2</sub> equivalent  
 $\text{Investment}_i$  is the total value invested in company  $i$   
 $\text{AUM}$  is the total size of the portfolio  
 $\text{EVIC}$  is defined in the glossary section  
 $\text{Revenues}_i$  are the total revenues of company  $i$ , in million USD

**Appendix: Benchmark Metrics<sup>6</sup>**

Metric	Value	Coverage
Scope 1 GHG Emissions (Tons CO <sub>2</sub> e)	749,354K	100%
Scope 2 GHG Emissions (Tons CO <sub>2</sub> e)	166,628K	
Scope 3 GHG Emissions (Tons CO <sub>2</sub> e)	3,882,922K	
Total Financed GHG Emissions (1+2) (Tons CO <sub>2</sub> e)	915,982K	
Carbon Footprint (1+2) (Tons CO <sub>2</sub> e/USD mn invested)	125	
Weighted Average Carbon Intensity (1+2) (Tons CO <sub>2</sub> e/USD mn sales)	333	
MSCI Implied Temperature Rise (ITR) (°C)	2.9	98.9%
MSCI Overall Climate Value-at-Risk - Orderly (%)	-7.6%	98.5%
MSCI Overall Climate Value-at-Risk - Disorderly (%)	-9.5%	
MSCI Overall Climate Value-at-Risk - Hot House World (%)	-15.3%	

<sup>6</sup>As set out in the portfolio's offering documents (where relevant and applicable), the MSCI EM (EMERGING MARKETS) Net Return in GBP ("Benchmark") is used to compare the portfolio's investment performance. The carbon emissions figures for the Benchmark have been provided for illustrative purposes only. In particular, the Benchmark is not an ESG benchmark and may not take ESG considerations into account. The composition and constituents of the Benchmark may also differ significantly from the composition and constituents of the portfolio.

**Appendix: ITR****How is the ITR metric calculated?**

The ITR metric compares current and potential future emissions of companies with an emissions pathway consistent with the Paris Agreement in order to consider alignment. Scope 1, 2 and 3 emissions are used in this calculation, and future emissions projections include the consideration of targets set by companies, for example through the Science Based Targets initiative.

The total emissions a company can emit to be consistent with a 2°C pathway is its carbon budget. A company or portfolio exceeding, or overshooting its carbon budget will receive an ITR >2°C, meaning that it is misaligned with the Paris Aligned goals. A company or portfolio that undershoots its carbon budget will receive an ITR <2°C, likely due to low or rapidly reducing emissions as a result of decarbonisation targets. Only listed equities and corporate bonds issuers are currently covered within the calculation.

The portfolio-level ITR uses an aggregated budget approach: it considers how much the sum of "owned" projected GHG emissions over-/under-shoot the sum of "owned" carbon budgets for the underlying portfolio holdings. The allocation base used to define ownership is EVIC in order to enable the analysis of equity and corporate bond portfolios.

**What are the key assumptions and limitations of the ITR metric?**

The ITR metric used in this analysis is from MSCI, and there is a meaningful variation in company and portfolio-level scores from different data providers. This variation results from differences in methodological choices including the consideration of emissions scopes, decarbonisation targets and the climate scenario used to define the carbon budget for each company.

Key assumptions for the MSCI ITR metric include:

- Consideration of Scope 1, 2 and 3 emissions
- Use of an internal decarbonisation target analysis approach, and assumptions that these targets are met
- A 1.55°C scenario benchmark with a net zero horizon of 2050, using NGFS pathways.

There is no guarantee that companies will meet their decarbonisation targets, or follow the emissions pathway estimated by MSCI. The ITR metric is not a real time estimate and may change over time, therefore it is prone to variance and may not always reflect a current estimate.

**Appendix: Climate Value-at-Risk****How is the Climate Value-at-Risk metric calculated?**

Climate Value-at-Risk is calculated by considering how different climate related risks and opportunities may impact a company over time. These are grouped into physical risk, policy risk and technology opportunities, and summed to give the total Climate Value-at-Risk. The risks are expected to lead to increased costs, while the opportunities can lead to increased revenues. Calculations are performed at the entity level. Further details on the Climate Value-at-Risk model can be found [here](#).

**What are the key assumptions and limitations of the Climate Value-at-Risk metric?**

Climate Value-at-Risk is not a projection of future value, it is a model used to estimate the physical and transition risks and opportunities for a company in different climate transition scenarios. For more details on each driver, refer to the [glossary](#).

**Appendix: Portfolio Historical Annual Calculations – Holdings Date 31 December**

Metric	2022	2023	2024	2025	2026
Scope 1 GHG Emissions (Tons CO2e)	77K	115K	234K		
Scope 2 GHG Emissions (Tons CO2e)	46K	44K	38K		
Scope 3 GHG Emissions (Tons CO2e)	1M	1M	1M		
Total Financed GHG Emissions (1+2) (Tons CO2e)	123K	159K	272K		
Total Financed GHG Emissions (1+2+3) (Tons CO2e)	1M	1M	1M		
Carbon Footprint (1+2) (Tons CO2e/USD mn invested)	45	62	102		
Carbon Footprint (1+2+3) (Tons CO2e/USD mn invested)	258	338	430		
Weighted Average Carbon Intensity (1+2) (Tons CO2e/USD mn sales)	94	226	363		
Weighted Average Carbon Intensity (1+2+3) (Tons CO2e/USD mn sales)	761	935	1,291		
Coverage	97.2%	96.4%	96.7%		
MSCI Implied Temperature Rise (ITR) (°C)	2.2	2.5	2.6		
Coverage	98%	96.8%	93.1%		
MSCI Overall Climate Value-at-Risk - Orderly (%)	-7%	-10%	-5%		
MSCI Overall Climate Value-at-Risk - Disorderly (%)	-10%	-14%	-5%		
MSCI Overall Climate Value-at-Risk - Hot House World (%)	-15%	-14%	-10%		
Coverage	93%	91.2%	95.5%		

## Glossary

Topic	Definition
Carbon Intensive Sector	The TCFD acknowledges that some industries are more likely to be financially impacted by climate change due to their exposure to transition and physical risks associated with their operations and products. The following sectors have been classified as 'carbon intensive' in the TCFD guidance: Energy (oil and gas, coal, electric utilities), Transportation (air freight, passenger air transportation, maritime transportation, rail transportation, trucking services, automobiles and components), Materials and Buildings (metals and mining, chemicals, construction materials, capital goods, real estate management and development) and Agriculture, Food and Forest Products (beverages, agriculture, packaged food and meats, paper and forest products).
Climate Value-at-Risk	Climate Value-at-Risk is designed to provide a forward-looking valuation assessment of a company or portfolio taking into account the climate related risks and opportunities faced under different climate scenarios. Climate Value-at-Risk is comprised of transition impacts through policy risk and technological opportunities, and physical risks. Details of these risks and opportunities are provided below.
Enterprise Value including Cash (EVIC)	The sum of the market capitalization of ordinary shares at fiscal year end, the market capitalization of preferred shares at fiscal year-end, and the book values of total debt and minorities' interests. No deductions of cash or cash equivalents are made to avoid the possibility of negative enterprise values.
Implied Temperature Risk (ITR)	The Implied Temperature Rise (ITR) metric provides an indication of how well a company or portfolio is aligned to the Paris Agreement goal of limiting global temperature rise to well-below 2°C. Expressed in degrees Celsius, this metric considers how much a company over- or under-shoots a company specific carbon budget, based on expectations of future emissions that take into account decarbonisation targets.
Orderly Scenario	The orderly transition scenario is an ambitious scenario that limits global warming to below 2 °C by 2100 through stringent climate policies and innovation. This scenario assumes that ambitious climate policies are introduced immediately and in a coordinated manner across jurisdictions and sectors. some jurisdictions reach net zero for all greenhouse gases. Physical risks are relatively low since temperature rise is limited. The REMIND model is used to generate the output.
Disorderly Scenario	The disorderly scenario limits global temperature rise to below 2°C by 2100 with high transition costs due to a lack of coordinated action across sectors. , This scenario explores the impact of high transition risk due to divergent policies across countries and sectors, and a rapid change in technology. As a result, carbon prices increase abruptly over the next few decades. Physical risks are higher than those in the Orderly scenario, but still relatively low as temperature rise by the end of the century is limited. The REMIND model is used to generate the output.
Hot House World Scenario	Hot House World is a 'business as usual' scenario that assumes only currently implemented policies, or those pledges in NDCs are enacted, leading to global temperature rise of 2.6°C by 2100. Since global efforts are insufficient to halt significant global warming, the scenario results in severe physical risk including irreversible impacts like sea-level rise. The REMIND model is used to generate the output.
Physical Risk (modelled)	MSCI considers the impact of future climate related physical risk from eleven distinct hazards on companies' facilities: extreme heat, extreme cold, heavy precipitation, heavy snowfall, wind gusts, coastal flooding, fluvial flooding, pluvial flooding, river low flow, tropical cyclones and wildfire.
Physical Risk	Physical risks from climate change can be separated into acute risks from natural disasters such as floods, tropical cyclones and wildfires, and chronic risks, which are related to long-term shifts in the climate, such as changes in rainfall patterns, rising sea levels or extreme heat. MSCI considers the impact of future climate related physical risk from eleven distinct hazards on companies' facilities.

## Glossary continued

Topic	Definition
Transition Risks and Opportunities	Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, this may pose varying levels of financial and reputational risks and opportunities to companies. The MSCI Climate Value at Risk metric considers policy related risks and opportunities from technological transformation.
Regulatory Risk (modelled)	For each scenario, MSCI considers the impact of future carbon pricing and the projected emissions for different sectors and countries until 2050. Together, these are used to consider the potential future financial impact on a company based on its current scope 1, 2 and 3 emissions.
Regulatory Risk	The transition to a low-carbon economy will be accompanied by extensive regulatory and policy changes across the globe. The climate change policies that countries enact in order to decarbonize will generate direct impacts for companies, for example through increased pricing of greenhouse gas emissions, shifts in consumer behaviour and preferences and transition to lower emissions technologies. Most countries pledged a Nationally Determined Contribution (NDC) as part of the Paris Agreement, which sets out their plans for this transition and their approach to decarbonisation.
Technology opportunities (modelled)	MSCI aims to model the potential upside of a low carbon transition by considering how an increase in green revenues through low carbon technologies could benefit company financials. MSCI's low-carbon technology opportunity scenario analysis is based on company-specific patent data. The model currently covers over 100 million unique patents that have been granted by 70 patent authorities worldwide. It uses granted 'low carbon' patents as a proxy for green revenues to model the potential increase in revenues under different climate scenario assumptions.
Technology Opportunities	The transition to a low carbon economy may provide opportunities for companies that are well positioned to benefit from a change in consumer behaviour and preferences, favourable policies and shift towards efficient, low carbon technologies.
NGFS	NGFS (Network for Greening the Financial System) was established in 2017, and is a group of central banks and supervisors that aim to develop and share best practices for the inclusion of climate risk management in the financial sector. The NGFS has worked with a number of academic institutions to design and develop a set of consistent climate scenarios that can be used by the financial sector for scenario analysis and risk management purposes. These include the Orderly Transition, Disorderly Transition, Hot House World scenarios referenced in the TCFD product reports.
REMIND model	REMIND is a type of integrated assessment model that is used by the NGFS to generate climate scenario pathways consistent with a given temperature limit, such as 1.5C, and under certain socio- economic conditions, such as an orderly transition. Details on the REMIND model can be found here (link to documentation: <a href="https://www.pik-potsdam.de/en/institute/departments/transformation-pathways/models/remind">https://www.pik-potsdam.de/en/institute/departments/transformation-pathways/models/remind</a> ) and details on its use in climate scenario can be found here (link to NGFS: <a href="https://www.ngfs.net/ngfs-scenarios-portal/">https://www.ngfs.net/ngfs-scenarios-portal/</a> ).
Paris Agreement	The UNFCCC Paris Agreement is a legally binding international treaty on climate change which was adopted at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016. Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels.
Greenhouse gas (GHG) emissions	Greenhouse gasses are defined as atmospheric compounds that have the ability to absorb and re-emit the heat coming from the Earth's surface. The Greenhouse Gas Protocol divides GHG emissions into scope 1 (direct GHG emissions), scope 2 (indirect GHG emissions from purchased electricity, heating and cooling) and scope 3 indirect GHG emissions from a company's value chain. Scope 3 emissions are split into 15 upstream and downstream categories. The upstream categories are purchased goods and services; capital goods; fuel and related energy activities; transportation and distribution; waste generated in operations; business travel; employee commuting; leased assets. The downstream categories are transportation and distribution; processing of sold products; use of sold products; end-of-life treatment of sold products; leased assets; franchises; investments. Measuring scope 3 GHG emissions is particularly challenging as it entails considering GHG emissions across a potentially wide range of economic activities which can be sensitive to methodological assumptions.

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