STATE STREET GLOBAL ADVISORS

TCFD Report

Japan Screened Index Equity Sub-Fund — HKHX

Date of Holdings: 29 Dec 2023 | Amount Invested: 956,685,640.12 GBP | Portfolio Type: Equity

Portfolio Overview

Coverage: 99.04%

	Disclosure Number/Weight	Emission Exposure tCO_2e	Relative Emission Exposure tCO_2e/invested tCO_2e/Revenue	
	Share of Disclosing Holdings	**Green House Gas Emissions**	**Relative Carbon Footprint**	**Weighted Avg Carbon Intensity**
Scope 1	Disclosed: 88.29% Modelled: 11.71%	54,036.79	57.03	54.49
Scope 2	Disclosed: 88.24% Modelled: 11.76%	24,026.50	25.36	36.76
Scope 3	Disclosed: 0.00% Modelled: 100.00%	733,832.32	774.49	895.33

Climate Value at Risk

Coverage: 99.04%

Orderly Transition			Disorderly Transition			Hothouse World		
Transition Risk	**Transition Opportunities**	**Physcial Risk**	**Transition Risk**	**Transition Opportunities**	**Physcial Risk**	**Transition Risk**	**Transition Opportunities**	**Physcial Risk**
-10.58%	2.56%	-3.99%	-6.90%	1.29%	-5.81%	-1.89%	0.52%	-7.60%

In this section, we provide data related to climate scenario analysis, making use of scenarios developed by the Network for Greening the Financial System (NGFS), and company-level climate value at risk data provided by MSCI (based on selected NGFS scenarios).

The NGFS scenarios were developed to provide a common starting point for analysing climate risks to the economy and financial system. It is important to note that the NGFS scenarios are not forecasts: instead, they aim at exploring the bookends of plausible futures (neither the most probable nor desirable) for financial risk assessment.

To reflect the uncertainty inherent to modelling climate related macroeconomic and financial risks, the NGFS scenarios use different models, and explore a wide range of scenarios across regions and sectors. Scenarios differ markedly in their physical and transition impacts, with significant uncertainty in the size of the estimates and variation across regions.

The NGFS scenarios explore a set of six scenarios covering the following dimensions:
- Orderly scenarios assume climate policies are introduced early and become gradually more stringent. Both physical and transition risks are relatively subdued.
- Disorderly scenarios explore higher transition risk due to policies being delayed or divergent across countries and sectors. For example, carbon prices are typically higher for a given temperature outcome.
- Hot house world scenarios assume that some climate policies are implemented in some jurisdictions, but globally efforts are insufficient to halt significant global warming. The scenarios result in severe physical risk including irreversible impacts like sea-level rise.

Please see the NGFS Scenario Portal for more details on NGFS climate scenarios.

In our report, we focus on the following three scenarios to cover different temperature outcomes and policy implementations, utilising outputs based on the REMIND-MAgPIE model:
- Orderly transition scenario: Net Zero 2050 (1.5°C): This scenario limits global warming to 1.5°C through stringent climate policies and innovation, reaching global net zero CO_2 emissions around 2050. Some jurisdictions such as the US, EU, UK, Canada, Australia and Japan reach net zero for all GHGs
- Disorderly transition scenario: Delayed transition (2°C): Delayed transition assumes annual emissions do not decrease until 2030. Strong policies are needed to limit warming to below 2°C. Negative emissions are limited.
- Hothouse world scenario: Nationally Determined Contributions (NDCs, 3°C): the NDC scenario includes all nationally pledged targets even if not yet backed up by implemented effective policies.

These scenarios are based on complex modelling of the Earth's physical and socioeconomic systems, and it is considered challenging to convert these into quantitative return implications for portfolios. For this purpose, we utilise MSCI's proprietary Climate Value-at-Risk (CVaR) dataset that converts these climate scenarios into company-level impacts at a 15-year time horizon (expressed as a percentage of a company's market value). It should be noted that MSCI CVaR data is based on several assumptions made by MSCI. Scenario analysis methodologies continue to evolve, and data presented here is subject to change in future. As described above, climate scenario analysis is provided to highlight potential climate risks and their underlying drivers, however there is considerable uncertainty related to these estimates, and specific risks vary under different scenarios.

Based on the MSCI CVaR dataset, we provide quantitative disclosure of three key pillars: (i) Policy Risk, which generally correlates to transition risk, (ii) Technology Opportunities, which generally correlates to transition opportunities, and (iii) Physical Risk.

Based on our analysis of the MSCI CVaR data for companies in a broad global equity and corporate fixed income index universe, companies in the Utilities, Materials and Energy sectors may be exposed to higher levels of transition risk compared to companies in other sectors. Similarly, those companies in the Utilities, Industrials and Materials sectors may be exposed to a higher level of transition opportunities compared to others. If the Fund invests in these sectors, those investments may be exposed to the climate risks and opportunities outlined, though company-level risks and opportunities vary within sectors.

Sources:
https://www.ngfs.net/sites/default/files/medias/documents/ngfs_climate_scenarios_for_central_banks_and_supervisors_.pdf.pdf
MSCI

Climate Scenario Alignment

Coverage: 99.04%

The Japan Screened Index Equity Sub-Fund has an Implied Temperature Rise increase of:

2.32°C

The climate scenario alignment uses MSCI's Implied Temperature Rise (ITR) model, and measures, in aggregate, a portfolio's temperature alignment (in °C) to keeping the world's temperature rise to 2°C by 2100. For example, an ITR of 2.5°C assigned to a given portfolio would indicate that the portfolio is exceeding its fair share of the global carbon budget, and that if everyone exceeded their fair shares by a similar proportion, we would end up in a world with ~2.5°C of warming. Please note there is significant uncertainty related to this temperature estimate, and outputs differ amongst different data vendors as methodologies continue to evolve and mature.

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https://www.ssga.com/publications/firm/Key-Features-of-Managed-Pension-Funds-Limited.pdf

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Glossary

Company-level definitions (emissions data)

Scope 1 emissions are direct emissions from operations that are owned or controlled by the reporting company. Examples include emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc., and emissions from chemical production in owned or controlled process equipment.

Scope 2 emissions are indirect emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company.

Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. Examples include emissions from the production of purchased products, transportation of purchased products, or use of sold products.

Enterprise value including cash (EVIC) is defined as 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.

Please note that climate-related datasets are built using a combination of (i) data reported by companies and collected by data vendors, and (ii) data estimated by the data vendors using their proprietary estimation models. We have included information in this report related to the overall data coverage for the portfolio in question, as well as the ratio between reported and estimated data where applicable. SSGA has not applied any missing value treatments or imputations in the calculation of metrics presented in this report.

Portfolio-level definitions (emissions data)

Metric	Description	Formula	Pros/Cons
Scope 1 and 2 emissions	The absolute Scope 1 and 2 greenhouse gas emissions associated with a portfolio, expressed in tons CO2e.	$\sum_n^i \frac{current\ value\ of\ investment_i}{issuer's\ EVIC_i} * issuer's\ Scope\ 1\ and\ 2\ emissions_i$	+ Metric may be used to communicate the carbon footprint of a portfolio consistent with the GHG protocol. + Metric may be used to track changes in GHG emissions in a portfolio. + Metric allows for portfolio decomposition and attribution analysis. − Metric is generally not used to compare portfolios because the data are not normalized. − Changes in underlying companies' EVIC can be misinterpreted.
Scope 3 emissions	The absolute Scope 3 greenhouse gas emissions associated with a portfolio, expressed in tons CO2e	$\sum_n^i \frac{current\ value\ of\ investment_i}{issuer's\ EVIC_i} * issuer's\ Scope\ 3\ emissions_i$	
Total carbon emissions	The absolute Scope 1, 2 and 3 greenhouse gas emissions associated with a portfolio, expressed in tons CO2e	$\sum_n^i \frac{current\ value\ of\ investment_i}{issuer's\ EVIC_i} * issuer's\ Scope\ 1,2\ and\ 3\ emissions_i$	
Carbon Footprint	Total carbon emissions for a portfolio normalized by the market value of the portfolio, expressed in tons CO2e/$M invested.	$\sum_n^i \frac{current\ value\ of\ investment_i}{current\ portfolio\ value} * \frac{issuer's\ Scope\ 1,2\ and\ 3\ emissions_i}{issuer's\ EVIC_i}$	+ Metric may be used to compare portfolios to one another and/or to a benchmark. + Using the portfolio market value to normalize data is fairly intuitive to investors. + Metric allows for portfolio decomposition and attribution analysis. − Metric does not take into account differences in the size of companies (e.g., does not consider the carbon efficiency of companies). − Changes in underlying companies' EVIC can be misinterpreted.
Weighted Average Carbon Intensity	Portfolio's exposure to carbon-intensive companies, expressed in tons CO2e/$M revenue.	$\sum_n^i \frac{current\ value\ of\ investment_i}{current\ portfolio\ value} * \frac{issuer's\ Scope\ 1,2\ and\ 3\ emissions_i}{issuer's\ Revenue_i}$	+ Metric can be more easily applied across asset classes since it does not rely on equity ownership approach + The calculation of this metric is fairly simple and easy to communicate to investors + Metric allows for portfolio decomposition and attribution analysis − Metric is sensitive to outliers − Using revenue (instead of physical or other metrics) to normalize the data tends to favour companies with higher pricing levels relative to their peers

Implied Temperature Rise Definitions

Metric	Description
Company Implied Temperature Rise	Estimates the global implied temperature rise (in the year 2100 or later) if the whole economy had the same carbon budget over-/undershoot level as the company analyzed, based on its projected Scope 1, 2 and 3 emissions. The metric compares the company's projected GHG emissions against its carbon budget. The total estimated carbon budget over-/undershoot is then converted to a degree of temperature rise using the science-based ratio approach of Transient Climate Response to Cumulative Carbon Emissions (TCRE). For example, an Implied Temperature Rise of 2.5°C would indicate that the company is exceeding its fair share of the global carbon budget, and that if the whole economy exceeded their fair shares by a similar proportion, we would end up in a world with ~2.5°C of warming.
Portfolio Implied Temperature Rise	A portfolio's Implied Temperature Rise measures, in aggregate, a portfolio's temperature alignment (in °C) to keeping the world's temperature rise to 2°C by 2100. The calculation uses an aggregated budget approach that compares the sum of financed projected carbon emissions against the sum of financed carbon emission budgets for the underlying portfolio holdings, this provides an estimation of the total carbon budget under-/overshoot of the portfolio. The total portfolio carbon emission over/undershoot is then converted to a degree of temperature rise using the science-based ratio approach of Transient Climate Response to Cumulative Carbon Emissions (TCRE). For example, an Implied Temperature Rise of 2.5°C assigned to a given portfolio would indicate that the portfolio is exceeding its fair share of the global carbon budget, and that if everyone exceeded their fair shares by a similar proportion, we would end up in a world with ~2.5°C of warming.

Source: MSCI ESG Research

Climate Value at Risk Definitions

Metric	Description
1.5°C Aggregated Policy Risk Company Climate VaR (REMIND NGFS ORDERLY) [%]	A company's aggregated downside policy risk exposure according to all emission sources (Scope 1, 2, 3), expressed as a percentage of the company's market value, assuming a global 1.5°C target and using carbon prices from the REMIND model under the NGFS Orderly scenario.
1.5°C Technology Opportunity Company Climate VaR (REMIND NGFS ORDERLY) [%]	A company's upside technology opportunity exposure, expressed as a percentage of the company's market value capped at 100%, assuming a global 1.5°C target and calculated using carbon prices from the REMIND model under the NGFS Orderly scenario.
1.5°C Aggregated Physical Risk Company Climate VaR (REMIND Orderly Average outcome) [%]	A company's expected downside or upside potential, expressed as a percentage of the company's market value, assuming trends in extreme cold, extreme heat, extreme precipitation, heavy snowfall, extreme wind, coastal flooding, fluvial flooding, tropical cyclones, river low flow and wildfires continue along the 1.5°C REMIND Orderly scenario.
2°C Aggregated Policy Risk Company Climate VaR (REMIND NGFS DISORDERLY) [%]	A company's aggregated downside policy risk exposure according to all emission sources (Scope 1, 2, 3), expressed as a percentage of the company's market value, assuming a global 2°C target and using carbon prices from the REMIND model under the NGFS Disorderly scenario.
2°C Technology Opportunity Company Climate VaR (REMIND NGFS DISORDERLY) [%]	A company's upside technology opportunity exposure, expressed as a percentage of the company's market value capped at 100%, assuming a global 2°C target and calculated using carbon prices from the REMIND model under the NGFS Disorderly scenario.
2°C Aggregated Physical Risk Company Climate VaR (REMIND Disorderly Average outcome) [%]	A company's expected downside or upside potential, expressed as a percentage of the company's market value, assuming trends in extreme cold, extreme heat, extreme precipitation, heavy snowfall, extreme wind, coastal flooding, fluvial flooding, tropical cyclones, river low flow and wildfires continue along the 2°C REMIND Disorderly scenario.
3°C Aggregated Policy Risk Company Climate VaR (REMIND NGFS NDC) [%]	A company's upside technology opportunity exposure, expressed as a percentage of the company's market value capped at 100%, assuming a global 3°C target and calculated using carbon prices from the REMIND model under the NGFS NDC scenario.
3°C Technology Opportunity Company Climate VaR (REMIND NGFS NDC) [%]	A company's upside technology opportunity exposure, expressed as a percentage of the company's market value capped at 100%, assuming a global 3°C target and calculated using carbon prices from the REMIND model under the NGFS NDC scenario.
3°C Aggregated Physical Risk Company Climate VaR (REMIND NDC Average outcome) [%]	A company's expected downside or upside potential, expressed as a percentage of the company's market value, assuming trends in extreme cold, extreme heat, extreme precipitation, heavy snowfall, extreme wind, coastal flooding, fluvial flooding, tropical cyclones, river low flow and wildfires continue along the 3°C REMIND NDC scenario.

References

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https://carbonaccountingfinancials.com/files/downloads/PCAF-Global-GHG-Standard.pdf

https://assets.bbhub.io/company/sites/60/2021/07/2021-TCFD-Implementing_Guidance.pdf

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