



# Climate Risk Report

Portfolio Name: WS Global Emerging Markets Index Pension Fund

As of: 31 December 2023

Currency: USD



# Carbon Emissions Dashboard

Carbon Footprint		Portfolio	Coverage
Allocation Base	<b>EVIC</b>		
<b>Financed Carbon Emissions</b> tons CO <sub>2</sub> e / USD M invested Investor Allocation: <b>EVIC</b>	Scope 1+2	165.6	93.3%
	Scope 3 – upstream	141.4	93.2%
	Scope 3 – downstream	470.5	93.2%
<b>Total Financed Carbon Emissions</b> tons CO <sub>2</sub> e Investor Allocation: <b>EVIC</b>	Scope 1+2	228.2	93.3%
	Scope 3 – upstream	194.9	93.2%
	Scope 3 – downstream	648.4	93.2%
<b>Financed Carbon Intensity</b> tons CO <sub>2</sub> e / USD M sales Investor Allocation: <b>EVIC</b>	Scope 1+2	372.8	93.3%
	Scope 3 – upstream	318.4	93.2%
	Scope 3 – downstream	1,059.2	93.2%

Weighted Average Carbon Intensity		Portfolio	Coverage
<b>Corporate constituents</b> tons CO <sub>2</sub> e / USD M sales	Scope 1+2	383.6	93.4%
	Scope 3 – upstream	286.2	93.4%
	Scope 3 – downstream	916.3	93.4%
<b>Sovereign constituents</b> tons CO <sub>2</sub> e / USD M GDP Nominal	GHG intensity	N/A	N/A

Fossil Fuel Exposure	Portfolio
Potential emissions from fossil fuel reserves (tCO <sub>2</sub> e / USD M invested)	6,951.6
Fossil Fuel Based Revenue Exposure	4.0%
Thermal coal exposure (Any tie)	5.2%
Oil & Gas exposure (Any tie)	9.8%
Exposure to Power Generation	
Thermal Coal (apportioned fuel mix, % of generation)	49.3%
Green and Fossil Fuel Based Revenue Coverage	93.8%

MSCI Low Carbon Transition Risk Assessment	Portfolio
Exposure to companies classified as:	
Low Carbon Solutions	1.6%
Low Carbon Transition Risk	29.4%
Low Carbon Transition Risk Coverage	93.3%

Transition Opportunities	Portfolio
Green Revenue Exposure	4.0%
Exposure to Power Generation	
Renewables (apportioned fuel mix, % of generation)	7.8%

Companies' Transition Plans	Portfolio
Companies with GHG emission reduction targets	60.3%
Companies with targets across all scopes	28.0%
Companies with SBTi approved targets	15.6%
Companies with top quartile carbon management score	25.2%

# Carbon Emissions: Sectoral Footprint

## Financed Carbon Emission (S1+S2) by Sector

	Portfolio
Utilities	1,271.8
Materials	885.4
Energy	421.4
Industrials	107.1
Consumer Staples	53.7
Information Technology	32.6
Health Care	29.7
Consumer Discretionary	22.0
Real Estate	14.3
Communication Services	13.9
Financials	3.0
<b>Total</b>	<b>165.6</b>

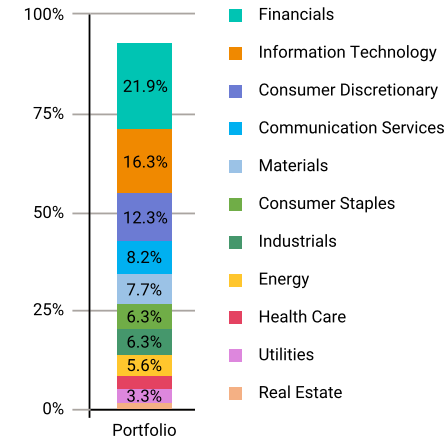
The sector table shows the comparison of the portfolio sector emissions (Scope 1 + Scope 2) to those of the benchmark. The key denotes the magnitude of the emissions in each sector with green denoting lower emissions, and red denoting higher emissions in that sector.

## Sectoral Contribution to Financed Carbon Emissions (S1+S2)

	Portfolio
Communication Services	0.7%
Consumer Discretionary	1.8%
Consumer Staples	2.2%
Energy	15.2%
Financials	0.4%
Health Care	0.7%
Industrials	4.4%
Information Technology	3.4%
Materials	43.9%
Real Estate	0.2%
Utilities	27.1%

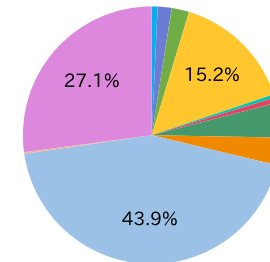
## Sector Weight to Financed Carbon Emissions (S1+S2)

Market Cap Weight



The column chart shows the composition by sector of the portfolio and benchmarks by market capitalization to financed carbon emissions. This highlights that dominant sectors, in terms of emissions, tend to be Energy, Utilities, and Materials.

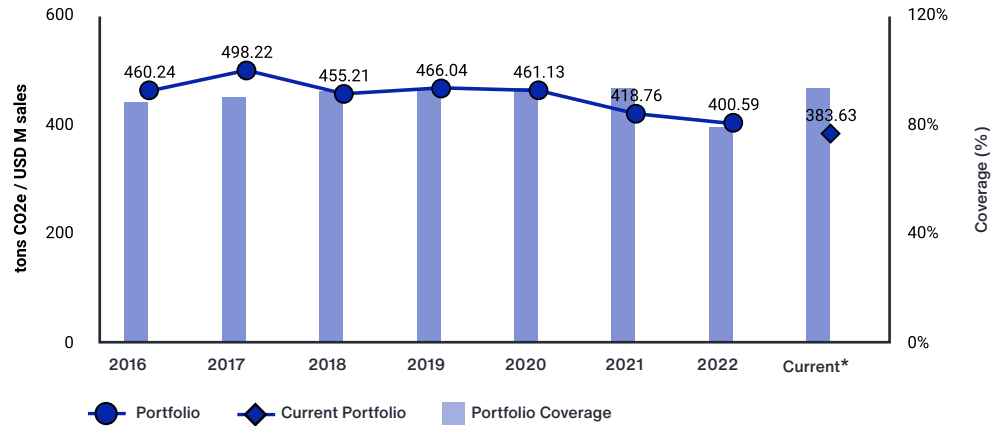
## Contribution to Financed Carbon Emissions



The pie chart shows the composition by each sector's contribution to financed carbon emissions. This highlights that dominant sectors, in terms of emissions, tend to be Energy, Utilities, and Materials.

# Carbon Emission: Trends and Profile

## Weighted Average Carbon Intensity of Current Holdings Over Time



\* Current refers to the selected analysis date and provides additional context to the analysis. For example, the figure shown could either be in the past at a specific point in time, or the present date if not specified.

**Change across 5 years = -15.7%**      **Change since baseline NZ year of 2019 = -17.7%**

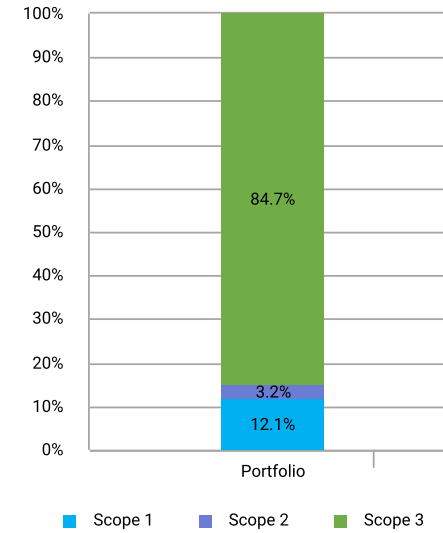
The chart above shows change over time of the weighted average carbon intensity (WACI) of the portfolio constituents and weights at the date of analysis. This analysis is intended to provide an understanding of how the companies in the portfolio have decarbonised over time, as investors increasingly monitor decarbonisation to support climate commitments such as net zero.

The portfolio WACI is illustrated with blue circles. Please note that the analysis does not take into account changes in constituents over this time period.

Portfolio coverage of this metric is also provided which provides contextual information. For example, a lower WACI figure may be related to lower coverage of that metric in a certain year. There can be lower coverage due to companies' reporting cycles and take time in different regions around the world.

Also provided is a % change of the WACI over a 5-year period and a % change compared to the commonly used net zero baseline year of 2019 for further monitoring and reporting.

## Contribution of Emissions by Scope



The chart above illustrates the emissions profile of the portfolio denoting the share between Scopes 1, 2, and 3 emissions. Please note Scope 3 here utilises a combination of estimated and reported emissions data.

# Climate Scenario Analysis

## Climate Value at Risk






Selected Scenario : 1.5°C NGFS Orderly

	1.5°C NGFS Orderly	1.5° REMIND NGFS Orderly	1.5° REMIND NGFS Disorderly	2° REMIND NGFS Orderly	3° REMIND NGFS NDC
	Portfolio	Portfolio	Portfolio	Portfolio	Portfolio
Policy Climate Var (Scope 1,2,3)	-15.2%	-15.2%	-20.4%	-6.9%	-3.0%
Technology Opportunities Climate VaR	1.0%	1.0%	1.8%	0.3%	0.2%
Physical Climate VaR Aggressive	-8.7%	-8.7%	-8.7%	-11.4%	-15.8%
Aggregated Climate VaR	-22.9%	-22.9%	-27.2%	-17.9%	-18.6%






## Physical Climate Value at Risk Detail

Selected Scenario : Aggressive

### Chronic Risks (0.5° global grid)

 Extreme Heat -2.4%	 Extreme Cold 0.1%	 Wind Gusts -0.1%	 Heavy Snowfall 0.0%	 Heavy Precipitation -0.4%
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### Acute Risk (high res)

 Tropical Cyclones -0.1%	 Coastal Flooding -6.1%	 Fluvial Flooding -0.2%	 River Low Flow -4.7%	 Wildfires 0.0%
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### Aggregate Physical Climate VaR

**-8.7%**

## Climate VaR Portfolio Coverage Summary

	Portfolio
Policy Climate VaR (Scope 1,2,3)	93.7%
Technology Opportunities Climate VaR	61.4%
Physical Climate VaR	90.5%

## Top 10 Physical Risk Climate VaR Companies

Security	Physical Risk Climate VaR Contribution	Primary Physical Risk Hazard
INDUSTRIAL AND COMMERCIAL BANK OF CHINA LIMITED	-0.42%	 Coastal Flooding
ALIBABA GROUP HOLDING LIMITED	-0.26%	 Coastal Flooding
VALE S.A.	-0.23%	 Coastal Flooding
Ping An Insurance (Group) Company of China, Ltd.	-0.23%	 Coastal Flooding
China Petroleum & Chemical Corporation	-0.20%	 Coastal Flooding
CHINA CONSTRUCTION BANK CORPORATION	-0.19%	 Coastal Flooding
JD.COM, INC.	-0.13%	 Coastal Flooding
TENAGA NASIONAL BERHAD	-0.12%	 Coastal Flooding
RELIANCE INDUSTRIES LIMITED	-0.11%	 Extreme Heat
QUANTA COMPUTER INC.	-0.11%	 Coastal Flooding

The table provides information on the most exposed companies to physical risk exposure in the portfolio such as extreme weather events in the selected physical risk scenario. However, physical risks can be both positive and negative and be expressed in both positive and negative values. MSCI currently models ten hazards including extreme heat and cold, coastal and river flooding, wildfires as well as wind gusts and precipitation. Physical changes can be event-driven ('acute') or longer-term in nature ('chronic').

# Climate Value at Risk

## Top 10 Aggregated Climate VaR Risk Contributors

Security	Aggregated Policy Risk Climate VaR	Technology Opportunities Climate VaR	Physical Risk Climate VaR	Aggregated Climate VaR	Weight (%)	Climate VaR Risk Contribution
VALE S.A.	-67.15%	0.01%	-24.31%	-91.45%	0.87%	-0.80%
Petroleo Brasileiro S.A. (Petrobras)	-81.26%	0.05%	-3.00%	-84.20%	0.62%	-0.52%
INDUSTRIAL AND COMMERCIAL BANK OF CHINA LIMITED	-7.52%	0.00%	-68.96%	-76.49%	0.55%	-0.42%
Petroleo Brasileiro S.A. (Petrobras)	-81.26%	0.05%	-3.00%	-84.20%	0.43%	-0.36%
HON HAI PRECISION INDUSTRY CO., LTD.	-42.19%	0.49%	-16.66%	-58.36%	0.59%	-0.34%
RELIANCE INDUSTRIES LIMITED	-15.62%	0.68%	-6.89%	-21.82%	1.51%	-0.33%
ALIBABA GROUP HOLDING LIMITED	-3.99%	0.38%	-10.64%	-14.25%	2.25%	-0.32%
Saudi Basic Industries Corporation SJSC	-99.43%	0.85%	-6.53%	-100.00%	0.29%	-0.29%
JD.COM, INC.	-28.24%	0.00%	-25.54%	-53.78%	0.48%	-0.26%
NTPC LIMITED	-100.00%	0.86%	-28.00%	-100.00%	0.26%	-0.26%

The table provides an overview of the companies with the highest negative Aggregated Climate VaR contribution in the portfolio. The position weight of each individual security in the portfolio is multiplied by the Aggregated Climate VaR to establish the Climate VaR risk contribution of the portfolio. Aggregated Climate VaR in this chart is the sum of Policy Risk from Direct GHG Emissions (Scope 1) Climate VaR, Technology Opportunities Climate VaR and Physical Climate VaR for the selected scenario.

Climate VaR numbers are calculated at the security level, i.e. 2 securities associated with the same issuer could have different Climate VaR.

## Portfolio Level Sovereign Climate VaR Results

	Portfolio
1p5C NGFS Orderly	0.00%
1p5C NGFS Disorderly	0.00%
2C NGFS Orderly	0.00%
2C NGFS Disorderly	0.00%
3C NGFS Current Policies	0.00%
3C NGFS	0.00%
Coverage	0.00%

Coverage here denotes total portfolio coverage across all asset classes, not only the sovereign portion of the portfolio. The coverage metrics presented in this report are computed in the context of the entire long-only side of the portfolio – no weight adjustments are performed for the respective scopes of corporate or sovereign exposures.

## Understanding Sovereign Climate VaR

Sovereign Bond Climate VaR is designed to provide a forward-looking and return-based valuation assessment to measure climate related risks in a sovereign bond investment portfolio. The fully quantitative model offers insights into how climate change could affect sovereign bond valuations through the use of a stress testing framework.

It estimates the change in the sovereign yield curve when market expectations move from a climate-agnostic baseline expectation to any other climate scenario. Yield curve changes are then used to stress test the value of local-currency sovereign bonds.

The model produces two types of outputs: the potential impact of climate change and economic decarbonization on implied yield curves and sovereign bond valuations.

## Portfolio Weights of Largest Contributor Countries by Time-to-maturity

Country/Duration	Total
<b>Total</b>	<b>0.00%</b>

Total includes all other country buckets not listed in the above list.

# Implied Temperature Rise

## MSCI Implied Temperature Rise Company Analysis

### Aggregated Implied Temperature Rise

**Portfolio:** 3.1°C

### Implied Temperature Rise: Companies with Highest Temperature Alignment

Company Name	Weight	Implied Temperature Rise
Saudi Basic Industries Corporation SJSC	0.3%	10.0°C
TRIP.COM GROUP LIMITED	0.3%	10.0°C
NTPC LIMITED	0.3%	10.0°C
China Shenhua Energy Company Limited	0.2%	10.0°C
WEG S.A.	0.2%	10.0°C
COAL INDIA LTD	0.1%	10.0°C
ACWA POWER Company SJSC	0.1%	10.0°C
SABIC Agri-Nutrients Company SJSC	0.1%	10.0°C
Contemporary Ampere Technology Co., Ltd.	0.1%	10.0°C
PT Astra International Tbk	0.1%	10.0°C

### Implied Temperature Rise: Companies with Lowest Temperature Alignment

Company Name	Weight	Implied Temperature Rise
HCL TECHNOLOGIES LIMITED	0.3%	1.3°C
POWER GRID CORPORATION OF INDIA LIMITED	0.2%	1.3°C
TECH MAHINDRA LIMITED	0.1%	1.3°C
WIPRO LIMITED	0.1%	1.3°C
ANGLOGOLD ASHANTI PLC	0.1%	1.3°C
Equatorial Energia S.A.	0.1%	1.3°C
CHINA DEVELOPMENT FINANCIAL HOLDING CORP.	0.1%	1.3°C
Telefonica Brasil S.A.	0.1%	1.3°C
Companhia Paranaense de Energia	0.1%	1.3°C
Companhia Energetica de Minas Gerais - CEMIG	0.1%	1.3°C

## Implied Temperature Rise

The Implied Temperature Rise (ITR) metric provides an indication of how well public companies align with global temperature goals. Expressed in degrees Celsius, it is an intuitive, forward-looking that shows how a company aligns with the ambitions of the Paris Agreement – which is to keep a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C. The portfolio-level Implied Temperature Rise compares the sum of “owned” projected GHG emissions against the sum of “owned” carbon budgets for the underlying fund holdings. The portfolio's total estimated carbon budget over- / undershoot is then converted to a degree of temperature rise (°C) using the TCRE. The allocation base used to define ownership is Enterprise Value including Cash (EVIC) in order to enable the analysis of equity and corporate bond portfolios.