
TCFD Portfolio Report

Portfolio: Invesco Managed Growth Fund (UK)

Benchmark: MSCI World Index

Data as at 31 December 2022

This Task Force on Climate-related Financial Disclosures (TCFD) product report has been produced in accordance with the Financial Conduct Authority's (FCA) rules and guidance regarding the disclosure of climate-related financial information consistent with TCFD Recommendations and Recommended Disclosures. These disclosures are intended to help meet the information needs of market participants, including institutional clients and consumers of financial products, in relation to the climate-related impact and risks of a firm's TCFD in-scope business.

This Product level TCFD report will set a baseline of consistent, comparable disclosures used to describe attributes which are unique to the Product, such as metrics and targets, and scenario analysis output.

A glossary of technical terms has been included in the annex.

Investment Risks

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested.

The fund may use derivatives (complex instruments) in an attempt to reduce the overall risk of its investments, reduce the costs of investing and/or generate additional capital or income, although this may not be achieved. The use of such complex instruments may result in greater fluctuations of the value of the fund. The Manager, however, will ensure that the use of derivatives within the fund does not materially alter the overall risk profile of the fund. Although the Fund invests mainly in established markets, it can invest in emerging and developing markets, where there is potential for a decrease in market liquidity, which may mean that it is not easy to buy or sell securities. There may also be difficulties in dealing and settlement, and custody problems could arise. The Fund's underlying investments may contain emerging market, smaller company and concentrated funds, for which investors should be prepared to accept a higher degree of risk than for a Fund with a broader investment mandate.

Governance, Strategy & Risk Management

Invesco's approach to climate change is integrated into our broader governance structure and risk management processes. This covers corporate responsibility (CR) considerations at operational level and environmental, social and governance (ESG) considerations at investment level. Invesco operates several working groups and councils with representatives from each investment centre to guide our strategy relating to climate change. This allows us to create common frameworks and standards that can be implemented globally across asset classes whilst taking into account the diverse viewpoints and requirements of our investment professionals and their clients.

In line with FCA recommendations, we would refer users to our group level TCFD Report. The report covers our Governance, Strategy and Risk Management around climate change, which are integrated into our broader governance structure and risk management processes and are applicable to our UK-registered entities and products. The resiliency of this portfolio under different climate scenarios is described below.

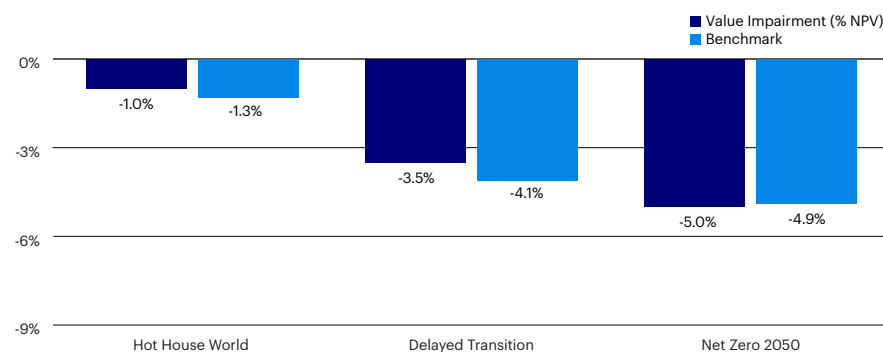
Scenario Analysis

For our scenario analysis (see glossary for definition), we use the phase III scenarios developed by the Network for Greening the Financial System (NGFS) for our climate scenario analysis and have selected its Hot House World, Delayed Transition and Net Zero 2050 scenarios to correspond respectively with the 'hothouse world', 'disorderly transition' and 'orderly transition' scenarios prescribed in section 2.3.11 of the FCA ESG Sourcebook¹.

Value Impairment

Value impairment is the decrease in the value of an asset due to climate change. It can be calculated by comparing the net present value (NPV) of the asset's future dividends with the asset's current market value. Climate scenario analysis is a tool that can be used to estimate the value impairment of assets due to climate change.

The potential value impairment for this portfolio according to each scenario is displayed in the below chart, followed by a description of the main assumptions.



Note: these values are based on 75% coverage of the fund securities within our analytics tool (Planetrics' PlanetView).

NGFS scenarios

- Hot House World:** Existing climate policies remain in place, but there is no strengthening of ambition level, leading to a temperature rise exceeding 3°C and severe and irreversible physical impacts. Heightened physical risks are assumed through high climate sensitivity (90th percentile), high ice-sheet melt and increasing tropical cyclone risks. Climate sensitivity is a measure used in climate science to determine how responsive the Earth's climate is to changes in atmospheric carbon dioxide concentrations. A "high climate sensitivity (90th percentile)" assumption means that in this scenario, a stronger than average response of the Earth's climate system to increased carbon dioxide levels is assumed. This would lead to more severe climate impacts under a scenario where efforts to mitigate climate change have been insufficient.
- Delayed Transition:** Imposes the 2°C target in 2100 and allows for temporary overshoot. Annual emissions do not decrease until 2030. Strong policies are then needed to limit warming to below 2°C. This scenario includes regional carbon price variation (meaning different regions or countries will put a different price on carbon, such as through carbon taxes or emissions trading schemes). Regions with net-zero targets are more ambitious than regions without them after 2030.
- Net Zero 2050:** Limits global warming to 1.5°C (the median temperature returns to below 1.5°C in 2100, after a limited temporary overshoot) through stringent climate policies and innovation, reaching global net zero CO₂ emissions around 2050. Some jurisdictions such as the US, EU and Japan reach net zero for all greenhouse gases (GHGs). The scenario assumes medium (as opposed to low) use of Carbon Dioxide Removal (CDR) technology.

Impact Drivers

The valuation impairment under each scenario can be described through seven impact channels, which look at the different types of transition risk and physical risk the underlying issuers face. The sectoral and regional composition of the portfolio will affect which drivers are more likely to drive the impact under each scenario.

- Physical impact** – the macroeconomic impacts of chronic physical risks and changes to physical damage costs to real assets caused by changes in extreme weather events, such as floods or tropical cyclones.

¹ FCA Environmental, Social and Governance sourcebook; <https://www.handbook.fca.org.uk/handbook/ESG.pdf>

- **Adaptation** – cost savings from measures taken to reduce the potential impacts of physical risks, such as installation of coastal flood defences to protect real assets in low-lying coastal areas.
- **Demand destruction** – effect of demand contractions for emissions-intensive goods, such as oil and internal combustion engine (ICE) vehicles.
- **Demand creation** – effect of demand expansions for low-carbon goods, such as solar panels or electric vehicles (EVs).
- **Direct carbon costs** – impact of carbon taxes, market-based carbon prices, or the cost of complying with other climate policy.
- **Abatement** – cost savings based on companies implementing economically optimal responses to carbon pricing policies.
- **Market impacts** – effect of interplay between risk exposure and company responses, i.e., cost pass-through, firm exit and market share reallocation.

Explanation of how these drivers could impact underlying assets

In the 'Hot House World' scenario, where existing climate policies remain in place without any significant increase in ambition, we could expect a temperature rise exceeding 3°C. As a result, severe and irreversible physical impacts such as extreme weather events, flooding, and water scarcity are more likely. This could significantly impact sectors such as agriculture, real estate, and tourism, particularly in developing countries that lack the resources to adapt effectively. Investments in these sectors and regions may face significant impairments. Moreover, companies in all sectors may face increased operating costs due to disruptions in supply chains and increased insurance premiums.

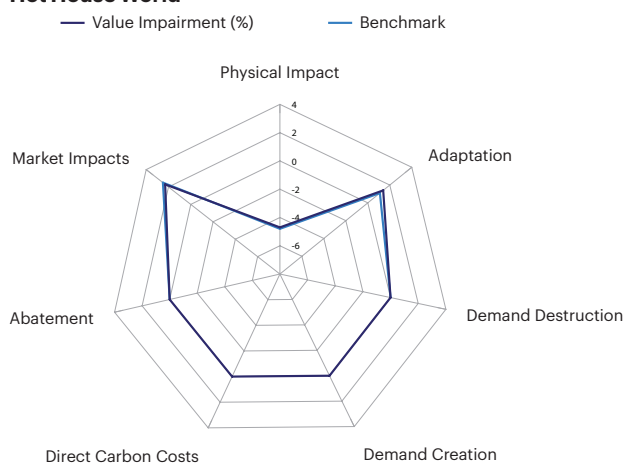
In the 'Delayed Transition' scenario, the implementation of robust climate policies is delayed, leading to a sudden and disruptive transition. This scenario could result in significant 'stranded assets' (assets that have unexpectedly or prematurely lost their value or become non-operational due to changes in market conditions or regulatory environment), particularly in fossil fuel-dependent sectors like energy, mining, and transportation. Companies that have not prepared for a low-carbon transition may face significant losses. Furthermore, the sudden shift in policy could cause market volatility, impacting the entire portfolio.

In the 'Net Zero 2050' scenario, there is a coordinated global effort to reach net-zero emissions by 2050. This transition could present significant opportunities for companies in renewable energy, electric vehicles, and other low-carbon technologies. However, even in this orderly transition, companies in carbon-intensive sectors may face challenges if they fail to adapt. Furthermore, the cost of this transition could lead to higher taxes and increased energy prices, which could impact a variety of sectors.

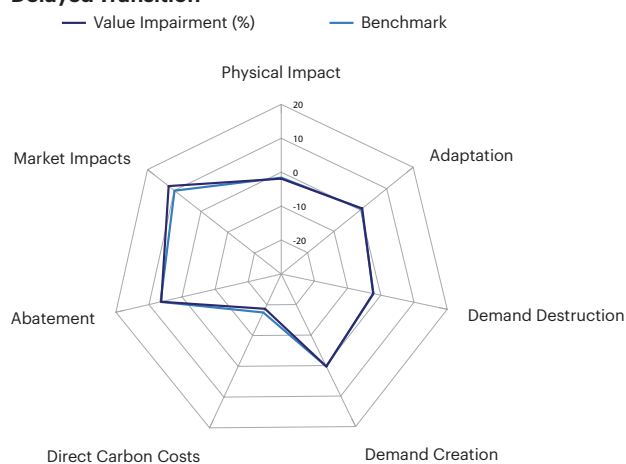
The impact on this portfolio will depend not only on the geographic and sectoral composition but also on the specific companies within those sectors. Companies that are proactively managing their climate risks and pursuing opportunities in the transition to a low-carbon economy may fare better than their peers, even in carbon-intensive sectors. Therefore, thorough climate risk assessment and management at the company level will be crucial for portfolio performance in any scenario.

This analysis provides a broad overview. The specific impacts on this portfolio will also depend on factors such as the companies' climate strategies, technological advancements, policy details, and how quickly and effectively markets respond to these changes. These factors are not always adequately captured by the climate models and scenarios. Nonetheless, the following charts provide a detailed illustration of how, according to the model, the impact drivers described above could influence this portfolio under each scenario. This is based on the currently available data and the assumptions inherent in each scenario.

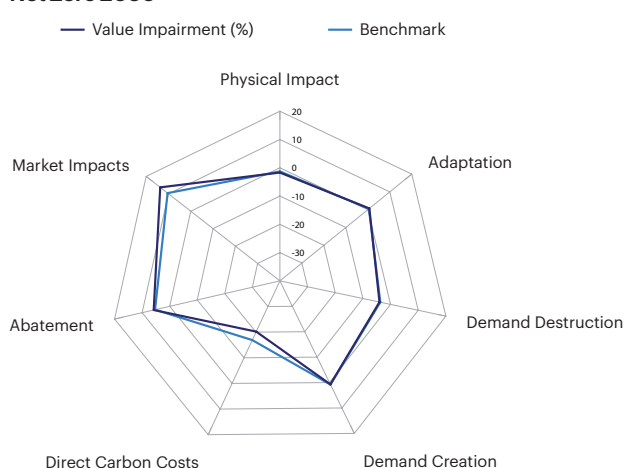
Hot House World



Delayed Transition



Net Zero 2050



Metrics and Targets

The table below presents the climate metrics for this fund along with a brief description of the metrics and how these should be used and interpreted. More information on these metrics can be found in [TCFD's Carbon Footprinting and Exposure Metrics](#) annex. Formulas have been provided for transparency, with each equation being the sum of the operations within the brackets.

2023 Description & Purpose

Weighted average carbon intensity (tCO₂e per USD million revenue)

Scope	2023	2022
Scope 1	157.92	131.56
Scope 2	40.05	28.99
Scope 3	1,208.39	1,082.77

$$\sum_{i=1}^n \left(\frac{\text{current value of investment}_i}{\text{current value of all investment}(\text{€M})} \times \frac{\text{investee company's Scope (x) GHG emissions}_i}{\text{investee company's €M revenue}_i} \right)$$

Description: Weighted Average Carbon Intensity (WACI) is a measure of a portfolio's exposure to carbon emissions, calculated by weighting each company's carbon emissions relative to its revenue by its proportion in the portfolio. This gives an indication of the portfolio's overall carbon efficiency, with a lower WACI indicating less carbon emitted per unit of revenue.

Purpose: This metric allows for the greatest comparison between portfolios as it normalizes emissions by revenue and then weights it by the size of the investment within the overall portfolio.

Total carbon emissions (tCO₂e)

Scope	2023	2022
Scope 1	52,060.84	25,608.84
Scope 2	11,713.14	6,064.75
Scope 3	388,736.47	246,729.24

$$\sum_{i=1}^n \left(\frac{\text{current value of investment}_i}{\text{investee company's enterprise value including cash}} \times \text{investee company's Scope (x) GHG emissions}_i \right)$$

Description: Total Emissions, also known as Financed or Absolute Emissions, represents the complete Greenhouse Gas (GHG) emissions produced by all the companies in a portfolio. It is calculated by considering each company's emissions proportional to the investor's ownership stake in that company, as determined by the company's enterprise value (including cash). In simpler terms, it represents the volume of GHGs an investor can be considered responsible for, based on their investments.

Purpose: To understand the real-world impact of investments by using an absolute measure. It can be used to track whether emissions reduction strategies eventually result in overall carbon reductions. Total emissions will fluctuate with company/portfolio size and are not comparable with other portfolios.

Carbon footprint (tCO₂e/ million AUM)

Scope	2023	2022
Scope 1	99.60	37.86
Scope 2	22.41	8.97
Scope 3	743.69	364.79

$$\sum_{i=1}^n \left(\frac{\text{current value of investment}_i}{\text{investee company's enterprise value including cash}} \times \frac{\text{investee company's Scope (x) GHG emissions}_i}{\text{current value of all investment}(\text{€M})} \right)$$

Description: Similar to total carbon emissions, this metric measures the total emissions associated with a portfolio but by more simply dividing emissions per million dollars invested.

Purpose: Carbon footprinting offers a direct link between money invested with its associated emissions and unlike absolute emissions does allow for like-for-like comparisons across portfolios.

Implied temperature rise (°C)

Pathways method;	3.2	3.2
Value & sector intensity weights		

$$\text{Temperature score}_F = \frac{\sum_{i \in F} \text{Temperature score}_i \times \text{GHG intensity}_i \times \text{AUM}_i}{\sum_{i \in F} \text{GHG intensity}_i \times \text{AUM}_i}$$

Description: An implied temperature rise indicates the expected increase in global temperature (in °C) by 2100 that would occur if the projected future greenhouse gas (GHG) emissions associated with a portfolio were to be reflected across the whole economy. As shown in the formula above, this calculation is performed for individual assets (i) in the portfolio based on their relative distance to sector-region decarbonisation pathways and then aggregated to the full portfolio (F) based on a combination of sector median GHG intensity (s) and AUM weights.

Purpose: Implied temperature rise metrics are intended to provide an easily translatable measurement of an issuer or portfolio's alignment to global warming potential. There are multiple approaches to estimating implied temperature rise, each with different advantages. The pathways method, weighted by value and sector intensity, is meant to act as a guide to how well the issuers in the portfolio are performing relative to their sector and geography. As methodologies vary so greatly, implied temperature rise scores offer little comparability between different providers and should not be used for this purpose.

Holdings used were as of 31 December 2022. Carbon data is calculated using data from ISS Climate solutions which covers 79% of the fund's assets excluding cash. Implied temperature rise is calculated using data from Planetric's which covers 75% of the fund's assets excluding cash. Portfolio level carbon intensity figures and temperature rise equivalents are an indicative measure of exposure to carbon risk that should be considered alongside sector and company specific metrics. Latest climate dataset available is as of 2021.

Please note that our current metrics suite does not encompass Climate Value-at-Risk (CVaR). We have made a deliberate decision not to pursue additional data for CVaR, considering that this report already includes a quantitative evaluation of potential financial impact to a portfolio through Value Impairment. The acquisition of CVaR data would necessitate substantial additional resources and costs, which at this juncture, we did not deem reasonably practicable however, we will aim to re-evaluate in due course.

Glossary of terms

Carbon Footprint

The carbon footprint of a financial portfolio is a measure of the total greenhouse gas emissions associated with the assets held in the portfolio. It is calculated by dividing the total emissions of the assets in the portfolio by the value of the portfolio. This gives us a measure of the emissions per million dollars invested. This metric allows investors to compare the carbon footprints of different portfolios.

Climate Scenarios

A description of possible future climate change pathways. Climate scenarios are used to assess the potential impact of climate change on businesses and other organisations.

Delayed Transition Scenario

Imposes the 2°C target in 2100 and allows for temporary overshoot. Annual emissions do not decrease until 2030. Strong policies are then needed to limit warming to below 2°C. This scenario includes regional carbon price variation. Regions with net-zero targets are more ambitious than regions without them after 2030. See NGFS.

Financial Conduct Authority (FCA)

The FCA regulates the conduct of 50,000 firms in the UK. It works to ensure that financial and prudential markets work for individuals, businesses the economy as a whole.

Governance

The way in which an organisation is managed and controlled. Climate-related governance refers to the way in which an organisation controls its exposure to climate-related risks and opportunities.

Greenhouse Gas (GHG) Emissions

Greenhouse gases are gases in the atmosphere that trap heat from the sun, causing the Earth's temperature to rise. The most common greenhouse gases are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6), and nitrogen trifluoride (NF3). These will all usually be converted into their carbon dioxide equivalent (CO2e) to allow comparison between the different gases. For example, methane has a global warming potential (GWP) of 25 over a 100-year period, which means that it is 25 times more potent at trapping heat than carbon dioxide. So, if a particular activity emits 1 ton of methane, the amount of CO2e emitted would be 25 tons (or 25 tCO2e).

Hot House World Scenario

Existing climate policies remain in place, but there is no strengthening of ambition level, leading to a temperature rise exceeding 3°C and severe and irreversible physical impacts. Heightened physical risks are assumed through high climate sensitivity (90th percentile), high ice-sheet melt and increasing tropical cyclone risks. See NGFS.

Impact Drivers

The factors within the scenario analysis models that determine the impact of climate change on businesses and other organisations. Impact drivers include changes in physical conditions, such extreme or chronic weather conditions, or market conditions, such as changes to regulations, market demand or consumer preferences. Each impact driver is measured separately to calculate the total value impairment.

Implied Temperature Rise

The amount of global warming that is implied by an organisation's total carbon emissions. Implied temperature rise is calculated by plotting an organisation's total carbon emissions and trajectory against a carbon budget (typically a global carbon budget broken down into sector-region allocations). The global carbon budget is the amount of carbon emissions that can be emitted without exceeding a certain temperature target.

Metrics and Targets

The way in which an organisation measures its performance and sets goals. Climate-related metrics and targets refer to the way in which an organisation measures performance and sets goals related to climate change.

Network for Greening the Financial System (NGFS)

An international network of central banks and financial supervisors that are working to promote sustainable finance. The NGFS have developed a set of climate scenarios tailored to financial sector companies. See 'Hot House World', 'Delayed Transition', and 'Net Zero 2050'.

Net Zero

Net zero refers to a state in which anthropogenic emissions of greenhouse gases (GHG) going into the atmosphere are balanced by anthropogenic removals out of the atmosphere, over a specified period. The 'net' in net zero is important because it will be difficult to reduce all emissions to zero on the required timescale. As well as deep and widespread cuts in emissions, there will likely be a need to scale up GHG removals. The Paris Agreement underlines the urgency of net zero, requiring states to aim to limit global warming to well below 2°C and preferably to 1.5°C.

Net Zero 2050 Scenario

Limits global warming to 1.5°C (the median temperature returns to below 1.5°C in 2100, after a limited temporary overshoot) through stringent climate policies and innovation, reaching global net zero CO2 emissions around 2050. Some jurisdictions such as the US, EU and Japan reach net zero for all GHGs. The scenario assumes medium (as opposed to low) use of carbon dioxide removal technology. See NGFS.

Physical Risk

The risk of physical damage to assets due to climate change. Physical risks include damage from floods, storms, droughts, and other extreme weather events both acute (sudden and short lived) and chronic (ongoing and permanent).

Risk Management

The process of identifying, assessing, and managing risks. Climate-related risk management refers to the process of identifying, assessing, and managing risks that are related to climate change.

Scenario Analysis

The process of analysing the potential impact of different climate scenarios. Scenario analysis is used to help organisations make decisions about how to manage climate-related risks and opportunities.

Scope 1 Emissions

Direct greenhouse gas emissions that occur from sources that are owned or controlled by an organisation. This could include emissions from fuel combustion for heating, power generation, and transportation.

Scope 2 Emissions

Indirect greenhouse gas emissions that occur from the generation of purchased electricity, steam, heat, and cooling.

Scope 3 Emissions

All other indirect greenhouse gas emissions that occur in the value chain of an organisation, excluding Scope 2 emissions. This includes emissions from transportation of goods and services, use of sold products and services, and other upstream and downstream activities in the value chain.

Strategy

The long-term plan of an organisation. Climate-related strategy refers to the way in which an organisation plans to address climate-related risks and opportunities.

TCFD (Task Force on Climate-related Financial Disclosures)

The Task Force on Climate-related Financial Disclosures is an international body that was set up by the Financial Stability Board to develop recommendations for companies to disclose climate-related financial information.

Total Carbon Emissions (AKA Financed Emissions or Absolute Emissions)

The total amount of greenhouse gases emitted by an organisation's portfolio. Total carbon emissions are calculated by adding up the carbon emissions of all the assets in the portfolio. This is an absolute measure and so will be heavily influenced not only by a company's activities or portfolio's exposure, but the size of a company or portfolio (i.e. by production output or AUM).

Transition Risk

The risk of financial losses due to the transition to a low-carbon economy. Transition risks can include the risk of stranded assets, regulatory change, or reputational damage.

Value Impairment (by Net Present Value)

Value impairment is the decrease in the value of an asset due to climate change. It can be calculated by comparing the net present value (NPV) of the asset's future dividends with the asset's current market value. Climate scenario analysis is a tool that can be used to estimate the value impairment of assets due to climate change.

Value impairment can be calculated for a variety of assets, including listed equity, corporate bonds and sovereign bonds. The specific method used will depend on the asset type and the climate scenario being considered.

It is important to note that value impairment is a forward-looking estimate and the actual value impairment of an asset may differ from the estimate.

Weighted Average Carbon Intensity

Weighted Average Carbon Intensity (WACI) is a measure of the carbon emissions of a company's portfolio, expressed in tonnes of carbon dioxide equivalent (CO₂e) per million dollars of revenue. It is calculated by taking the total carbon emissions of a company's portfolio and dividing it by the company's total revenue.

WACI is a useful metric for investors to use to compare the carbon emissions of different companies. A lower WACI indicates that a company has lower carbon emissions relative to its revenue. Investors can use WACI to identify companies that are taking steps to reduce their carbon emissions and to invest in companies that are aligned with their environmental goals.

Important information

All data is as at 31/12/2022 and sourced from Invesco unless otherwise stated. The data presented in this report is calculated using information provided by a third-party data vendor. The accuracy, completeness, and relevance of the calculated data are contingent upon the accuracy and completeness of the data provided by this third-party vendor. The numbers reported represent our best effort to provide the most accurate calculations in light of the data available. However, there are no warranties or representations, express or implied, regarding the completeness, accuracy, or suitability of this data for any particular purpose.

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For the most up to date information on our funds, please refer to the relevant fund and share class-specific Key Investor Information Documents, the Supplementary Information Document, the financial reports and the Prospectus, which are available using the contact details shown.

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