

BP Pension Fund Climate Change Report

1 January to 31 December 2023



Welcome



Welcome to our third annual climate change report.

Climate change is one of the largest and most complex challenges faced by the world today, affecting the global economy, the environment,

and humanity. Addressing climate change remained a high priority for many governments in 2023.

Although agreements made at COP 28 (the annual UN Climate Change Conference) were limited in their ambition, the outcomes reinforced an enabling environment for climate action. At the same time, 2023 was confirmed as the warmest year on record, with temperatures further boosted by the natural El Niño weather event. The amount of CO₂ in the atmosphere also continued to rise. Positively, 2023 saw record spending on clean energy in the US thanks to the 2022 Inflation Reduction Act.

Addressing climate change remains not only relevant but also of increased importance given the lack of sufficient overall progress in decarbonising the real economy.

We continue to insist our asset managers effectively engage with top emitters on their progress in reducing greenhouse gas emissions, and with all other companies on ensuring they have credible transition plans. We also progress with the development of our Net Zero Ambition.

We continue to build on our previous reports, noting that data availability, although improving, generally remains a limiting factor. This is particularly so for unlisted investments. Substantial challenges also remain in relation to the reliability and credibility of estimation models.

Our 2023 climate change report highlights progress made last year on how we assessed and managed climate-related risks and opportunities, includes findings from the analysis we carried out on the potential interactions of climate-related uncertainties and longevity risk with our funding level, and presents work we have done on the preparatory portfolio alignment analysis of additional asset classes, which were not previously covered (including liability driven investments (LDI) and property).

We hope you find this report informative. We welcome any questions or comments, which you can send using the details on the final page of this report.

Brendan Nelson

Chair

BP Pension Trustees Limited on behalf of
BP Pension Fund

11 July 2024



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Executive summary

As Trustee of the Fund, we take seriously our responsibility as a long-term investor on behalf of our members. We recognise the value of integrating environmental, social and governance factors (ESG), which include climate change, into our investment processes and through effective stewardship, and provide details of our approach in our Responsible Investment policy (RI policy) which is incorporated in the Fund's Statement of Investment Principles (SIP).

We recognise the scale of the climate change challenge and believe we can help drive positive change through our investment and stewardship decisions. Our fiduciary duty is to safeguard and pay the benefits of our members as and when they fall due and, with this in mind, we expect our asset managers* to present us with investment opportunities which are in line with our investment strategy and which support the low-carbon energy transition. We identify climate change as a systematic, long-term material financial risk to the value of the Fund's investments and the funding level. As part of our fiduciary duty, therefore, we consider climate-related risks and opportunities when making investment decisions. We also acknowledge that climate change may have an effect on the strength of our Sponsor's covenant to the Fund (its ability to support the Fund).

We continue to believe that sharing information on how the Fund addresses climate change is an important way to improve transparency and accountability to our members and stakeholders, and we support the UK government and regulators in their endeavours to improve and enhance the standardisation of reporting in relation to climate change.

During 2023, we continued to assess and manage climate-related risks and opportunities, and achieved the target set out in the 2022 climate change report. The data reported in the metrics and target section of this report has been obtained from third-party providers. While we believe that the data can be interpreted meaningfully, the evolving nature of this area means that there are limitations to the conclusions that can be drawn and, naturally, we cannot accept responsibility for any inaccuracies in this data.

This report covers the period from 1 January 2023 until 31 December 2023 and, in accordance with the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations, explains our actions and our approach across the following four pillars: governance, strategy, risk management, and metrics and targets.

*In this report, the term 'asset managers' is used interchangeably with 'managers'.



About the Fund

The Fund is a defined benefit pension arrangement (sometimes known as a final salary pension) that is closed to new members* and the future build-up of benefits. The purpose of the Fund is to provide benefits as set out in the Fund's Trust Deed and Rules, for approximately 57,000 members. The Fund's investment time horizon is long term, with some pension benefits still expected to be in payment for decades to come.

The Fund's long-term investment objective is to be invested in assets which closely match the liabilities (the expected future benefits owed to members) and to maintain a sufficient funding level (the ratio of assets to liabilities). As at 31 December 2023, it had assets of approximately £20 billion.

As the funding position has gradually improved over the recent years, we have substantially reduced the Fund's exposure to investment risk, moving from growth assets (mainly listed equities) to UK government bonds and other fixed income investments. We also removed exposure to emerging market bonds during the reporting year. This is in line with our prudent de-risking strategy.

The funding position remained strong in 2023. As at 31 December 2023, the Fund was 125% funded on our ongoing technical provisions basis and so are not currently in need of any contributions from our Sponsor. We continue our journey to a position where we are no longer dependent on our Sponsor's financial support, and we are planning further changes to the Fund's strategic asset allocation to help increase the security of our members' benefits. It is important to note that the investment decisions we take are independent of the business investment decisions our Sponsor makes to generate returns for its shareholders.

Governance

In this section, we set out how climate change considerations are incorporated into our governance and decision-making processes, and we outline key roles and responsibilities for assessing and managing climate-related risks and opportunities relevant to the Fund.

The Trustee's executive organisation, led by the Chief Executive Officer (CEO) and her Leadership team, has the delegated authority for the executive management of the Fund, within parameters set by the Trustee Board. It provides quarterly reporting informing the Trustee Board and its Committees of the executive's activities and regularly participates actively in Board and Committee meetings.

At each meeting, the Trustee Chair encourages open debate and constructive challenge in relation to any proposals put forward to the Trustee Board and its Committees. The governance structure facilitates timely, effective decision-making during the meetings, by individuals with the appropriate skills and experience. It is regularly reviewed so that it remains fit for purpose, with its last review having taken place in 2022.

The investment team, which incorporates the Responsible Investment (RI) team, overseen by the Chief Investment Officer (CIO), uses the Fund's stewardship priorities of climate change, human rights and board effectiveness as a framework each year to help monitor and assess progress made by the Fund's asset managers. Details are obtained annually on asset managers' actions and outcomes to gain confidence on whether their processes and engagement activities are likely to be effective.

*For simplicity, we refer to 'members' rather than 'beneficiaries' throughout.

Another important aspect of our governance processes is relevant training for the key decision-makers. During 2023 the RI team facilitated as well as received timely and targeted training including the following:

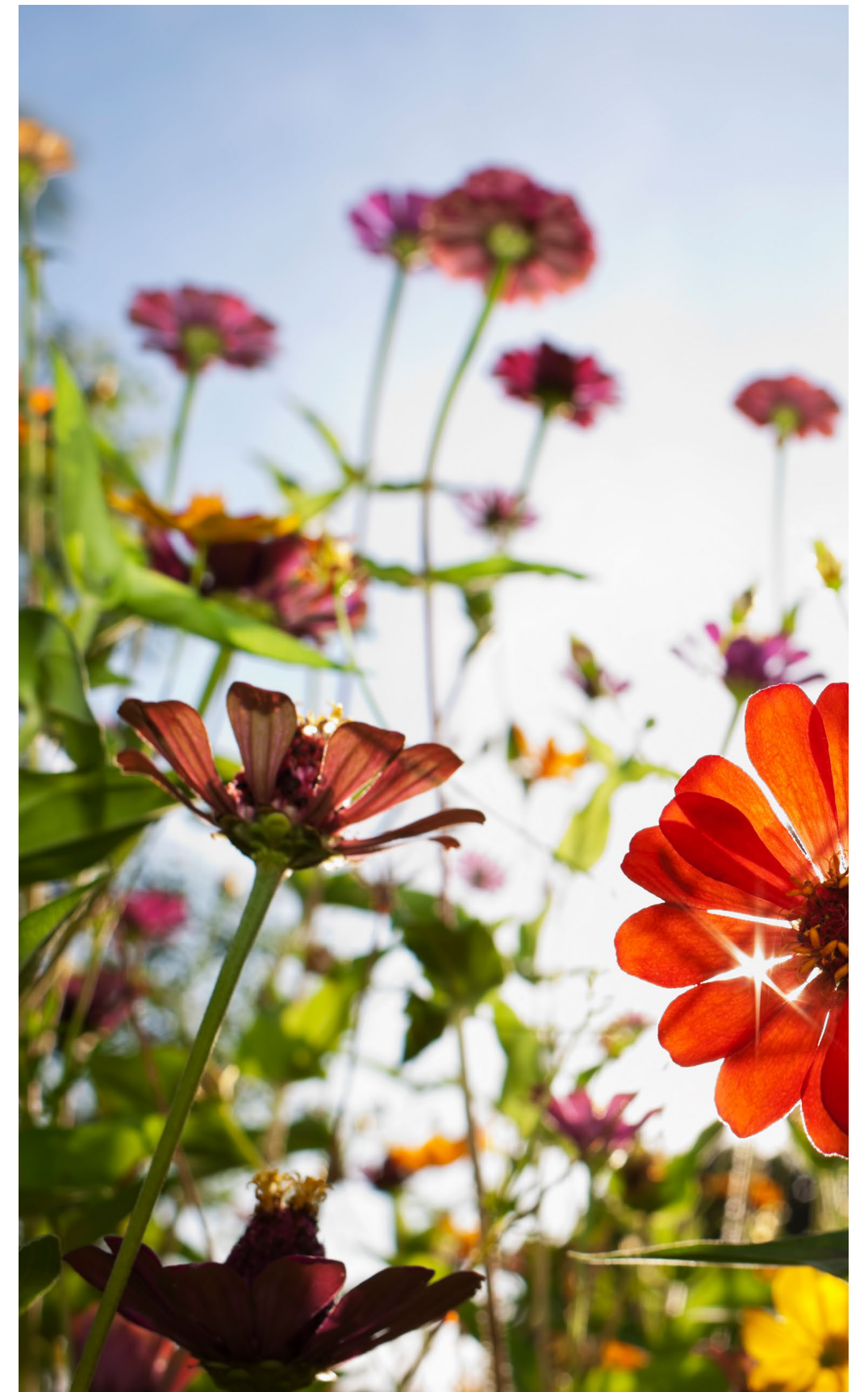
- In collaboration with the Fund’s strategic investment adviser, Redington, the Board received training on definitions and types of portfolio alignment metrics ahead of the Trustee selecting a specific metric to report in the Fund’s climate change report.
- The Fund’s external climate analysis provider, Ortec Finance (Ortec), also provided training to the Board on *Navigating Climate Metrics: An Insight into Ortec Finance Implied Temperature Rise Model*.
- The investment team has participated in multiple training sessions with Ortec to understand the methodology used when performing climate analysis on the Fund, including any updates to the models and methodology used.
- The RI team requested and received an overview of market best practices on climate change and TCFD reporting from Redington to compare our practices with the wider industry and aim to align with them where applicable.

Strategy

In this section we outline how we have integrated climate change considerations into our investment strategy. We remain supportive of the goals of the Paris Agreement and the world’s efforts to achieve global net zero greenhouse gas (GHG) emissions*. The Net Zero Ambition (NZA) statement which we released at the end of 2022 demonstrated our commitment to addressing climate change risks and contributing to real economy decarbonisation.

The continuation of the broader investment de-risking process is expected to further reduce the Fund’s sensitivity to climate-related risks. In 2023, the Trustee Board approved further changes to our strategic asset allocation which targeted a lower level of investment risk and which incorporated observations from the climate risk scenario analysis we performed the year before and discussed in our 2021 climate change report. As a result, we reduced allocations to listed equities, divested from emerging market debt and increased the allocation to liability driven investment (LDI).

During 2023, we carried out a climate scenario analysis exercise. This was done to reassess the resilience of the Fund to climate change-related risks in light of the changes to our asset allocation and new updates in the modelling developed by Ortec.



*For simplicity we refer to the ‘GHG emissions’ as ‘emissions’ throughout this report.

Risk management

As we continued to evaluate climate change-related risks and opportunities through our manager monitoring process, we also considered market events.

In this section, we set out how we assess and manage the Fund's exposure to long-term climate change-related risks and short-term shocks to help us remain resilient to both. The two main types of climate-related risks we monitor are transition risks and physical risks. These are explained below:

- **Transition risks** refer to the potential financial and economic risks and opportunities from the transition to a low-carbon economy (i.e. one that has a low or no reliance on fossil fuels). For example, those risks can include the possibility of future restrictions, or increased costs, associated with high-carbon activities and products. There are also opportunities which may come from the development of low-carbon technologies. In order to make a meaningful impact on reducing the extent of global warming, most transition activities need to take place over the next decade and certainly in the first half of this century.
- **Physical risks** include temperature-related risks and cover risks stemming from physical damage caused by storms, wildfires, droughts and floods, as well as risks caused by natural

resource scarcity (i.e. water). The higher the future level of global warming, the greater the physical risks are expected to be in frequency and magnitude. Physical risks are expected to be more pronounced with time, though the extent of the risks is highly dependent on whether global net zero emissions are achieved by 2050.

As a well-funded defined benefit fund, closed to new accruals, the focus of risk management is to minimise all risks, including climate change, while preserving the funding level surplus. The Fund's overall de-risking strategy implemented over the past few years has contributed to reducing the Fund's exposure to climate change-related risks. Both reduction in allocation to listed equities and increase in our hedging strategies, showed positive impact from a climate change risk management perspective.

We apply our risk management process at a Fund level, through strategic asset allocation, and at mandate/asset class level, through manager selection, monitoring and engagement.

In support of our NZA, we have strengthened our asset manager oversight process and increased engagement with our asset managers on their efforts to influence investee companies to establish credible climate transition strategies, especially in respect of the high-emitting

companies they are invested in on the Fund's behalf. Throughout 2023, we continued to monitor whether our asset managers have established adequate engagement plans with their investee companies which, in our view, are key to increasing the likelihood of successful engagement that leads to meaningful progress in real economy decarbonisation.

Metrics and target

Metrics

We continued to monitor and report on a broad range of climate metrics in 2023, including emissions-based metrics covering Scopes 1, 2 and 3, data quality, data quality process metric and a portfolio alignment metric. The latter is a forward-looking indicator of how companies in the portfolio are progressing towards meeting the goals of the Paris Agreement of limiting the increase of the global average temperatures to 1.5°C above pre-industrial levels.

We note that the disclosure of Scope 3 emissions by companies continues to be limited, with most metrics predominantly based on estimation models and assumptions linked to sectoral and geographical information. We are also conscious of the limitations of data provided for the more illiquid assets and factor this into our assessment.

Similarly, while we appreciate that the use of portfolio alignment metrics could help us understand the direction of travel regarding our NZA, the lack of standardisation in how these metrics are calculated often leads to different and non-comparable results between methodologies.

We understand that accurate and robust data is necessary for informed decision-making and assessment of progress towards real economy decarbonisation. As such, in 2023, we continued engagement with our asset managers on their efforts in urging investee companies and issuers to disclose their emissions, as well as maintained an active dialogue with data providers on ways they can help us in this area.

Mindful of the limitations of the emissions calculations, we observed a reduction in the absolute financed emissions metric for our listed equities, largely as a result of the reduction to the allocation in this asset class. On the other hand, we observed an increase in the absolute financed emissions metric for our corporate bonds mandates between 2022 and 2023. This might be driven by the sector rotation within each mandate, and a substantial increase in data coverage, as well as recent volatility in market valuations, which impact financed emissions metrics. However, we note that this metric has in overall terms reduced from 2021, the first time we reported it. We include more detail on this in the **Target section**.

Target

We support policymakers and regulators in their efforts towards standardisation and establishing best practice for climate-related data disclosure. The work on improving the quality of data is helping us to gain more confidence in the metrics we monitor and targets we can set to measure our progress.

In the 2021 climate change report, we set a target in relation to the climate data quality process metric, which was to expand our preparatory portfolio alignment analysis to cover all of the Fund's assets. In October 2023, we conducted an exercise with Ortec to understand the methodology, input data requirements and review the existing data availability and current data gaps for the remaining asset classes, property and sovereign bonds (including LDI). Following the assessment, we proceeded with running the portfolio alignment analysis for sovereign bonds and reviewed the output metrics. For property, we deemed the necessary input data to be insufficient to proceed with full analysis. Our in-house property manager is currently running a project to collect and enhance the quality of data for our real estate assets. Once this project is completed, we will run a portfolio alignment analysis based on Ortec's model.

As we achieved the target set in 2022, we have also introduced a new target which is in support of our NZA and covers the reduction of the absolute financed emissions for our listed equities and corporate bonds mandates.



Governance

Our Fund's governance structure

As Trustee of the Fund, we have a responsibility to establish climate-specific objectives and measure the progress we make against them. We have done this by establishing a climate change governance framework. The Board is kept informed of progress on the Fund's climate change-related activities mainly through quarterly reports issued by the Fund's investment team and discussions with the Board's strategic investment adviser.

The Trustee's governance structure is designed to provide transparency and visibility of the Fund's activities to the Board and its committees while ensuring the Trustee Board can operate in an effective and efficient manner. The governance structure facilitates timely and effective decision-making by individuals with the appropriate skills and experience, including active dialogue and constructive challenge to any proposals put forward to the Board and its committees.

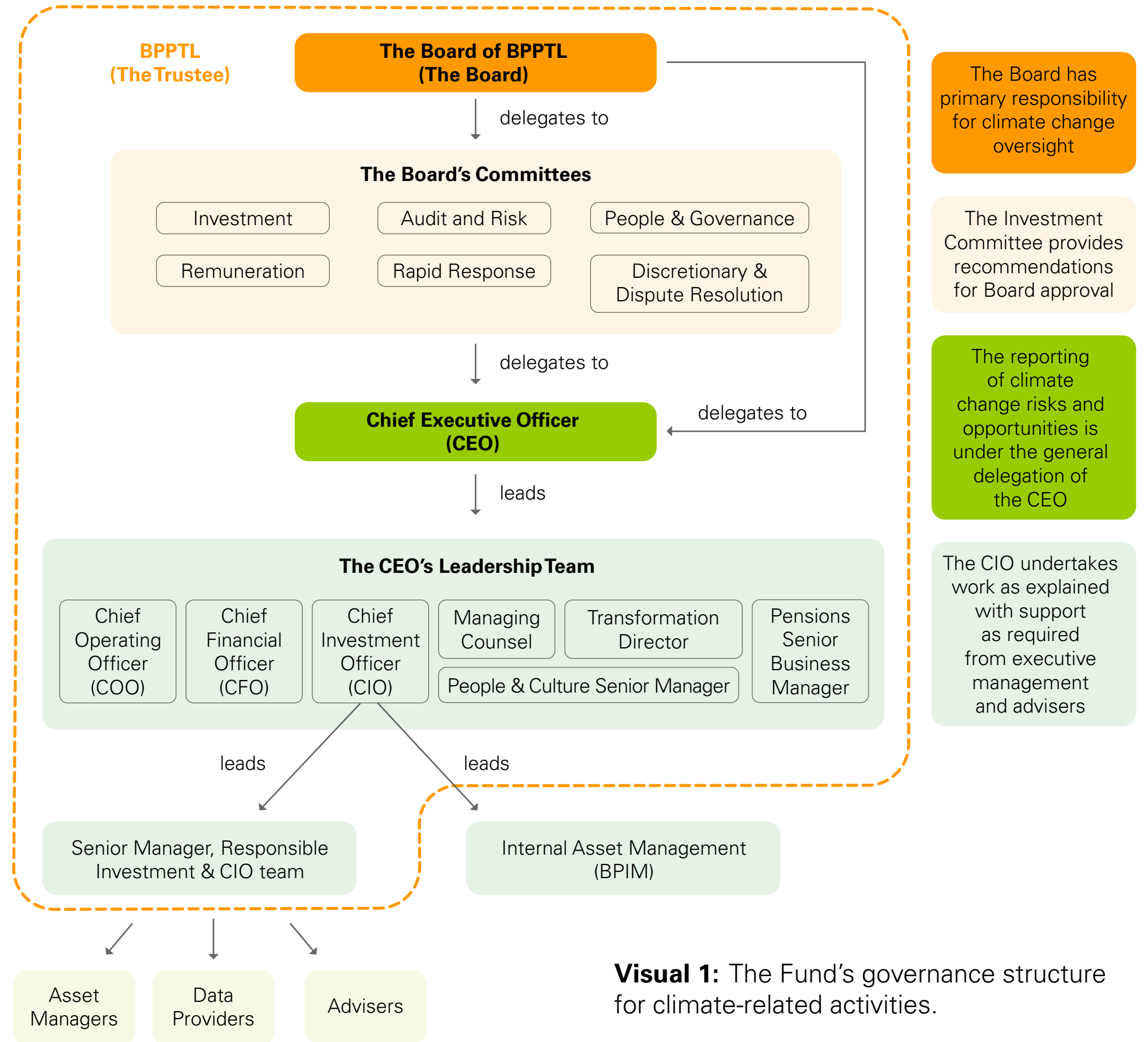
The diagram shows the Fund's governance and organisational structure as it relates to all climate-related activities.

is governed by

BP Pension Fund (The Fund)

Sponsors

bp
BP plc and other bp participating employers



Visual 1: The Fund's governance structure for climate-related activities.

Key roles and responsibilities

The Trustee Board delegates to the CEO and her Leadership team certain accountabilities and responsibilities with regards to responsible investment, including climate change. The CEO is also accountable for the Fund's risk management framework and the CIO, supported by the Senior Manager, Responsible Investment and the broader investment team, is responsible for investment strategy, climate-related risks and opportunities, and climate scenario analysis in line with the climate change regulations.

This investment team provides quarterly reports informing the Trustee Board and its Investment Committee of its delivery of responsible investment, which includes climate change-related activities, and it regularly participates actively in Board and Committee meetings.

The RI team's key climate change-related accountabilities are to:

- address material climate-related risks and opportunities in relation to investments, actuarial matters and covenant, including developing processes to manage climate change-related risks
- advise on and help develop the Fund's climate-related strategies
- assess the performance of the Fund's asset managers in terms of how they manage climate-related risks and opportunities.

Additionally, we use external investment consultants and advisers to assist us in carrying out our responsibilities. They are chosen on the basis that they are highly skilled, experienced and adequately equipped to assess and advise on climate-related risks and opportunities.

On an annual basis we review the performance of our external consultants and advisers against the objectives and standards expected of them. The results of this review are shared with the respective consultant or adviser in order that any potential development points can be addressed. Where improvements are considered insufficient, we reserve the right to initiate a tender process to select a new adviser or to amend the team's composition.

Our current advisers who assist us in fulfilling our climate-related responsibilities include:

- **Redington** is our strategic investment adviser, whose responsibilities include reviewing and providing feedback on our RI strategy, policy and beliefs and our broader stewardship and governance activities. Redington attend and actively participate in our Investment Committee and Board meetings to provide input in relation to the strategic direction of the Fund. They also provide training for both the investment team and the Board.
- **Ortec Finance** supports the investment team with climate scenario modelling and portfolio alignment analysis on the Fund.

- **Cardano** is our covenant adviser and incorporates climate risks as part of their covenant risk analysis.
- **Mercer** provides ESG ratings on prospective and current asset managers, which supplements our manager-monitoring process. Mercer also provides an independent view of managers' climate change credentials.

Over the course of 2023, Ortec provided training to the investment team on the alignment metric. The Board received dedicated training from Redington to provide it with sufficient knowledge and understanding to consider issues and challenges relating to climate change, including the implications of net zero for the Fund. Redington also provided views on this climate change report and how we compare to the wider industry and developments within the market.

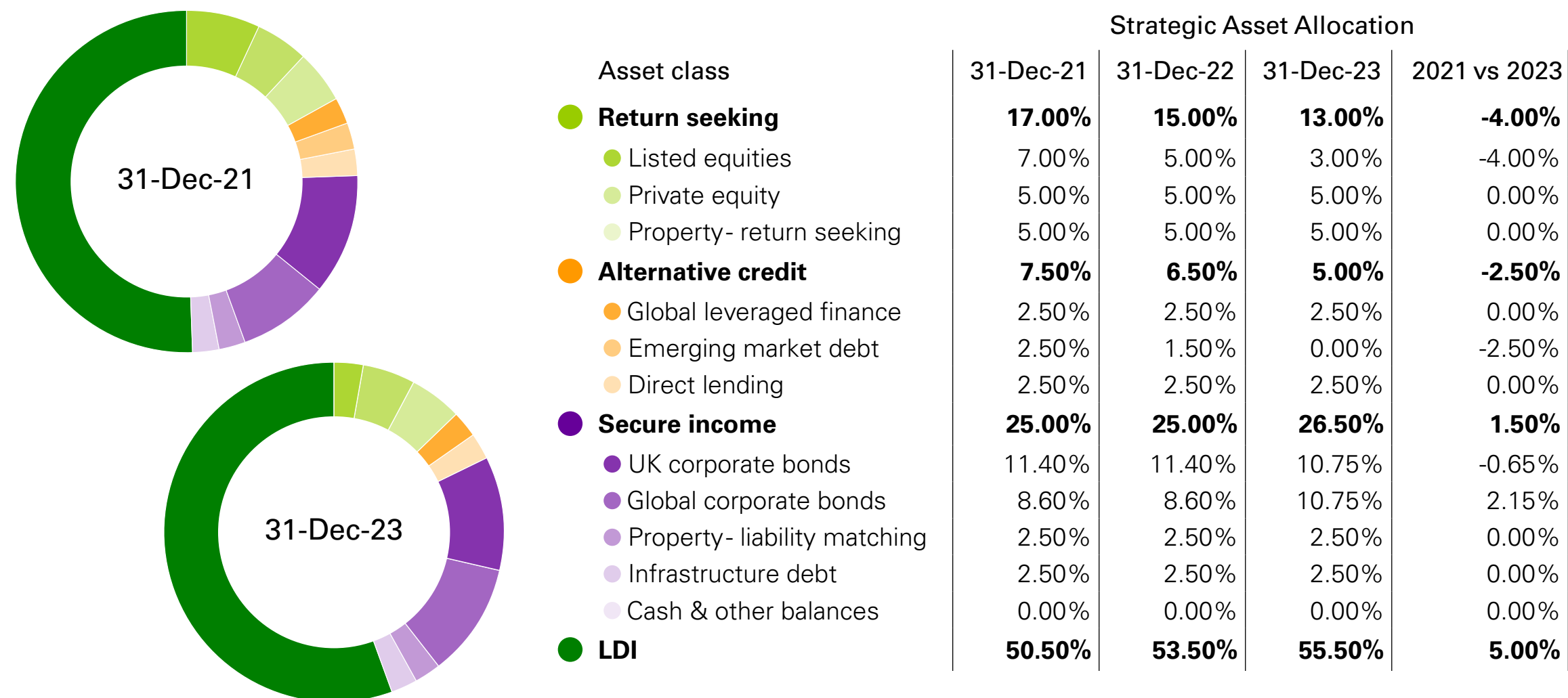
During the quarterly responsible investment updates, Board and Investment Committee members debated, questioned and challenged the information provided by our advisers and the investment team with regards to the progress made on the implementation of the RI strategy, as well as how climate change-related risks and opportunities were monitored and managed via engagement with the Fund's managers. This process allowed the Trustee to gain comfort that the advisers and the investment team were taking adequate steps to integrate climate change considerations into provided advice and investment decisions.

Strategy

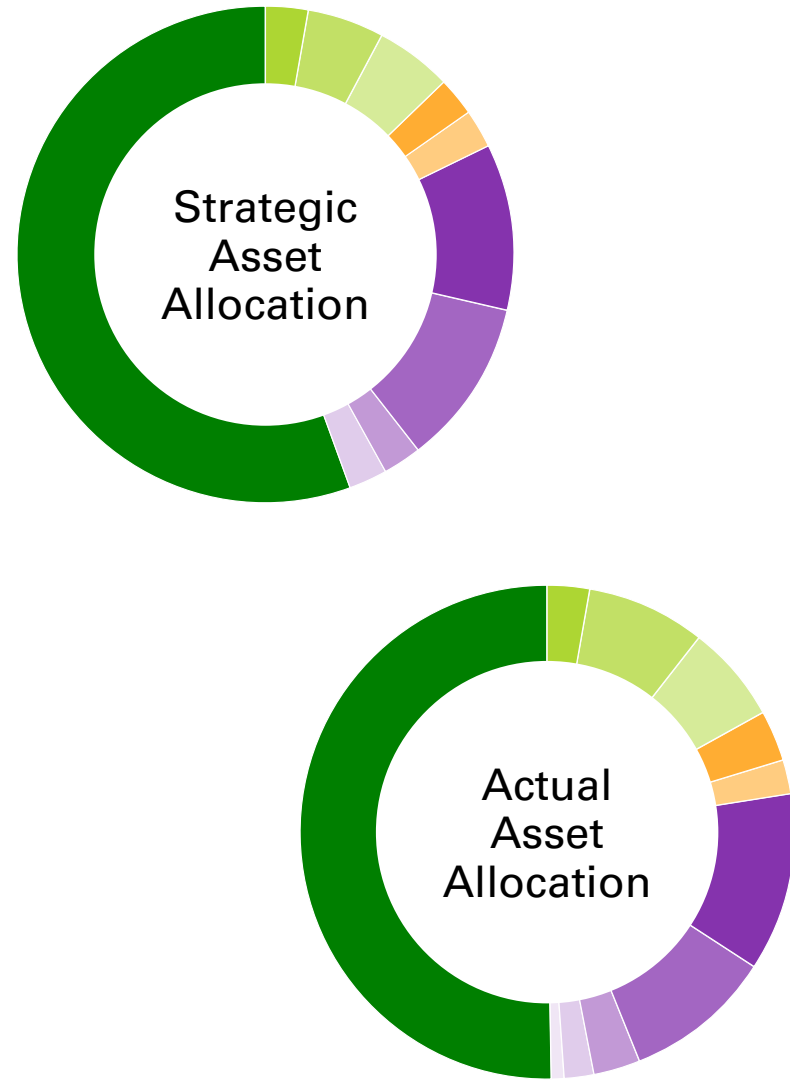
In assessing the resilience of our funding strategy to climate change risks, climate scenario modelling and portfolio alignment analysis are key tools which allow us to consider a range of hypothetical outcomes, links, impacts and concentrations across investment risk, funding risk and covenant risk. We overlay our findings with a qualitative assessment of climate change impact on our Sponsor when assessing the strength of its covenant, and seek independent advice, when required, from our covenant adviser. The Fund's overall de-risking strategy implemented over the past few years has contributed to reducing the Fund's risk exposure to climate change-related risk by reducing the allocation to listed equities and increasing the level of hedging strategies. These activities showed positive impact from a climate risk management perspective.

Our strategic asset allocation

The new strategic asset allocation (SAA) was approved by the Trustee Board in the second half of 2023. The revised SAA included reducing allocations to return seeking assets, alternative credit and allocations made to secure income. During the year we sold our investments in emerging market debt, which represented 1.5% of the Fund's strategic asset allocation as at 31/12/2022, and also removed exposure to these markets from the passive listed equities strategy. These changes were expected to further mitigate the potential impacts on the portfolio of climate transition and physical risks under the disorderly energy transition scenario.



Visual 2: Changes in our SAA between 31 December 2021 and 31 December 2023.



Strategic vs Actual Asset Allocation			
Asset class	Strategic Asset Allocation 31-Dec-23	Actual Asset Allocation 31-Dec-23	Difference
Return seeking	13.00%	17.20%	
● Listed equities	3.00%	3.00%	0.00%
● Private equity	5.00%	7.80%	2.80%
● Property- return seeking	5.00%	6.40%	1.40%
Alternative credit	5.00%	5.40%	
● Global leveraged finance	2.50%	3.10%	0.60%
● Direct lending	2.50%	2.30%	-0.20%
Secure income	26.50%	27.20%	
● UK corporate bonds	10.75%	11.60%	0.85%
● Global corporate bonds	10.75%	9.70%	-1.08%
● Property- liability matching	2.50%	3.00%	0.50%
● Infrastructure debt	2.50%	2.20%	-0.30%
● Cash & other balances	0.00%	0.60%	0.60%
LDI	55.50%	50.20%	-5.30%

Visual 3: Difference between our SAA and the actual asset allocation as at 31 December 2023 (Listed Equities include an options protection overlay).

Scenario analysis considerations

During 2023, we worked with Ortec to perform climate scenario analysis on the Fund using their ClimateMAPS tool (please see **Appendix 2** for details). Ortec has continued to improve and expand their climate scenarios offering, with significant updates implemented in the second quarter of 2023.

Since we last used ClimateMAPS for our scenario analysis, Ortec has renamed their existing three scenarios to *Net Zero (NZ)*, *Net Zero Financial Crisis (NZFC)* and *High Warming (HW)* and added a fourth scenario called *Limited Action (LA)*. Under this scenario, policymakers will not make additional commitments, and the decarbonisation planned via the National Determined Contributions (NDC) will fall short of the Paris Agreement goals. This means global average temperature would be substantially higher (2.8°C above pre-industrial temperatures), but still lower than assumed in the High Warming scenario. We believe this additional scenario helps to better understand the climate change-related risks for the Fund in a scenario aligned with the existing warming trajectory, where implementation of more demanding climate change policies is facing greater resistance.

In light of the addition of the LA scenario, and given the changes in our SAA following the additional investment de-risking undertaken over the past two years, we decided to update the scenario analysis this year.

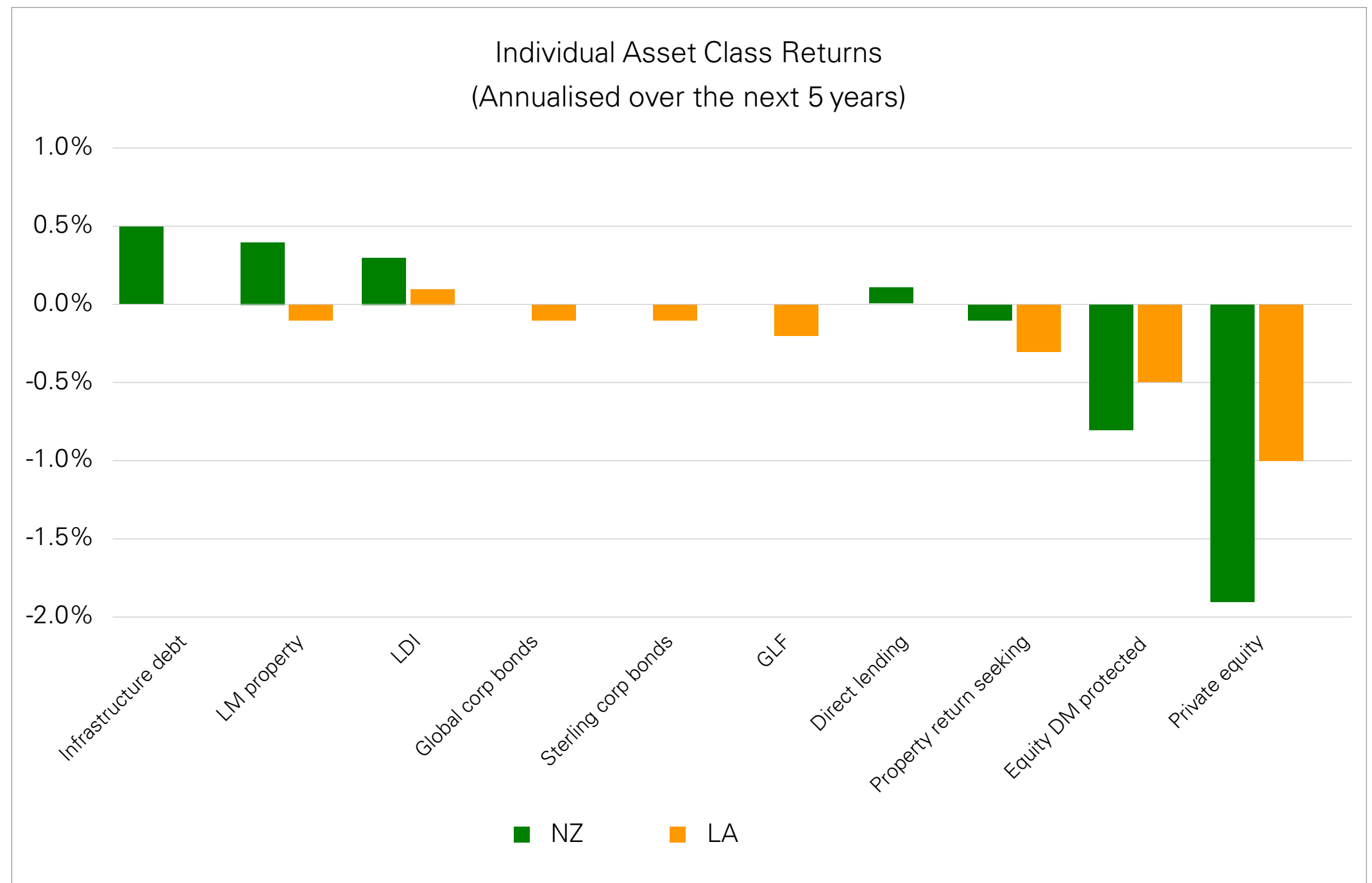


Given the Fund's funding level and the de-risking journey undertaken to safeguard it, we expect the reduced exposure to return-seeking assets will lower the Fund's exposure to transition risks which are more likely to impact return and asset prices in the short term. Since we carried out the last scenario analysis, we have substantially reduced our exposure to listed and private equities and completely divested emerging market debt.

We assess and acknowledge the longer-term results of the scenario analysis (looking at 2050 and beyond). However, given the uncertainty, around medium-term policy development and the rapid development of climate science, we believe it is more relevant for the Fund to focus on shorter-term risks at this stage. On the right are the details of the analysis, with a focus on the next five years, which we believe are more significant for the accuracy of the risk prediction.

New Limited Action (LA) scenario impact

The portfolio investment return projections suggest an annualised performance drag of c.-0.6% for the LA scenario relative to the NZ scenario over the next five years. This can be explained by lower expected returns for LDI and secure income assets under the LA relative to the NZ scenario linked to a reduced transition risk. While listed equities and private equity performances are expected to be less negative under the LA relative to the NZ scenario, they have a limited impact on the Fund's overall return, given their diminishing allocation (c. 6% by 2028).

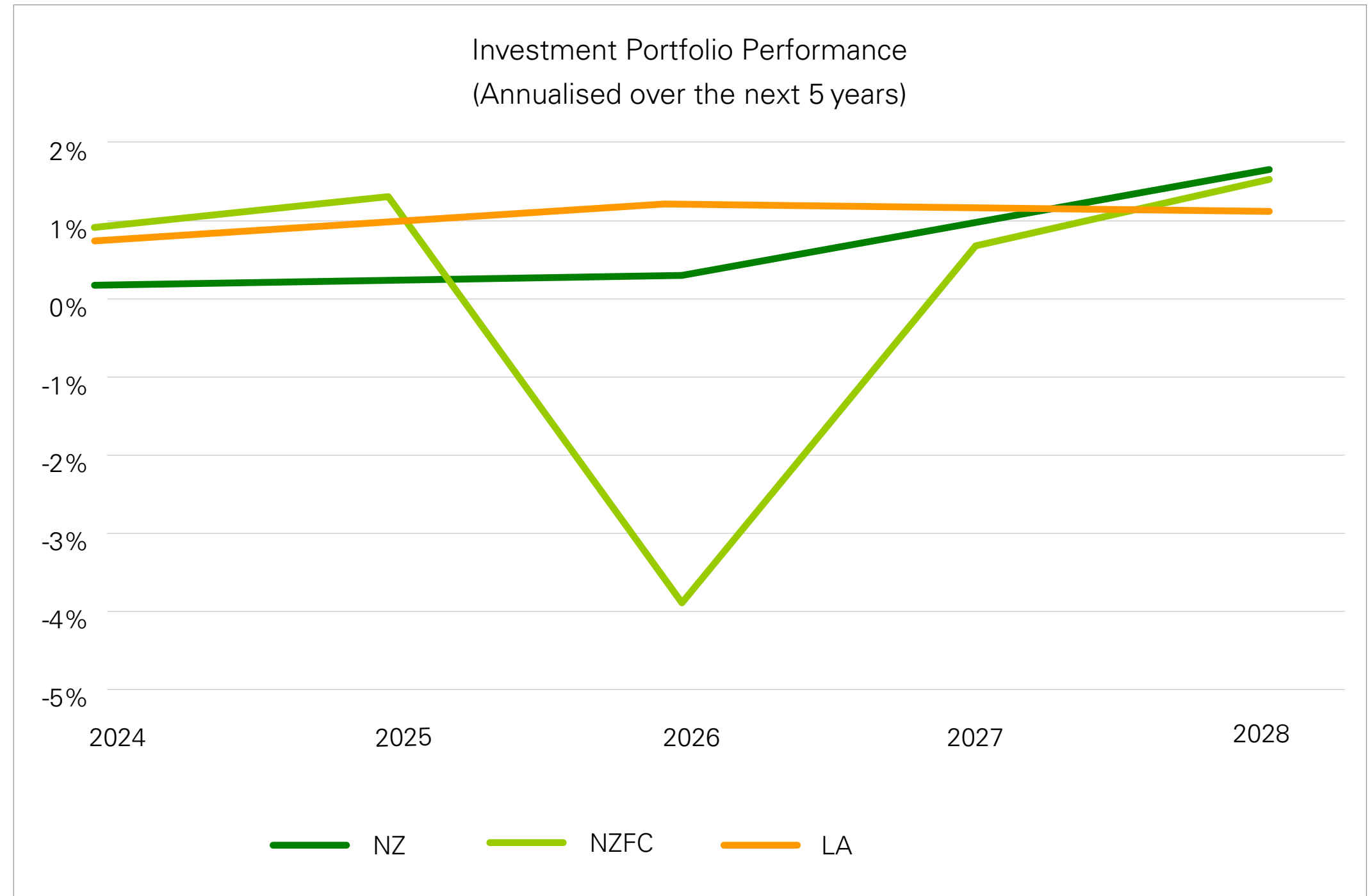


Visual 4: Relative returns for LA and NZ scenarios compared to a climate agnostic scenario.

Net Zero Financial Crisis (NZFC) scenario impact

Under the NZFC scenario, the Fund's performance is expected to be -2% to -4% lower relative to the NZ scenario in the year of the financial stress. However, considering a five-year period, and assuming that the financial stress takes place in year 2, the Fund's performance under the NZFC scenario is expected to recover and to be comparable to the Fund's performance under the NZ scenario at the end of the period.

Furthermore, comparing the Fund's performance between the scenario analysis done in 2021 and 2022, under the NZFC scenario we note that the five-year annualised performance has improved by c. 2%, with the Fund's performance recovering more significantly post the financial stress impact in the new run. We can reasonably attribute this better performance to the progress made around the investment de-risking over the past three years, which have increased the Fund's resilience against a potential disorderly transition scenario where the transition risk is more material.



Visual 5: Relative returns for NZ, NZFC and LA scenarios compared to a climate agnostic scenario over the next five years.

Our Net Zero Ambition

We remain supportive of the goals of the Paris Agreement, and the world's efforts to achieve global net zero emissions and pursue efforts to limit the temperature rise to 1.5°C above pre-industrial levels. In this respect, in December 2022, we published our **Net Zero Ambition statement**.

Our NZA is to transition our investments to achieve net zero emissions for the whole portfolio by 2050, or sooner, and in support of this ambition set a shorter term emission reduction target (see **Target section**). We believe adopting this NZA will help us to contribute to real economy decarbonisation, while effectively managing the Fund's climate-related risks and opportunities. We recognise that achieving our NZA is dependent on governments and policymakers delivering on their existing commitments and providing necessary new policy changes.

We continue monitoring the net zero approaches and related progress of our asset managers and continue to discuss with them how they can best support us in our NZA. As yet, we have not found it necessary to modify our segregated mandates and have not initiated any amendments to those mandates, but we keep our investment strategy and strategic asset allocation under regular review. In addition, we periodically reassess whether there is a need to adjust any of the parameters of individual mandates.

Our intention is to continue the ongoing dialogue with our asset managers on how we can collectively contribute to progressing real economy decarbonisation and society's drive to achieve net zero emissions. An important aspect of our asset manager oversight process includes seeking assurance that they have established adequate engagement plans with any high-emitting companies they are invested in on the Fund's behalf.

During 2023, we defined our net zero action plan to aid us in delivering on our NZA, making sure the necessary governance steps are taken into account and that it remains consistent with the objectives of our investment strategy. We also started holding dedicated meetings with our listed equities and corporate bonds managers to understand in more detail their net zero related investment solutions. Once we have collated the required information, we aim to assess whether any of the proposed approaches meet our current investment strategy and assist the Fund in fulfilling its purpose. Any proposed further steps after this analysis will need to be presented to the Investment Committee and, depending on their recommendation, approved by the Trustee Board.



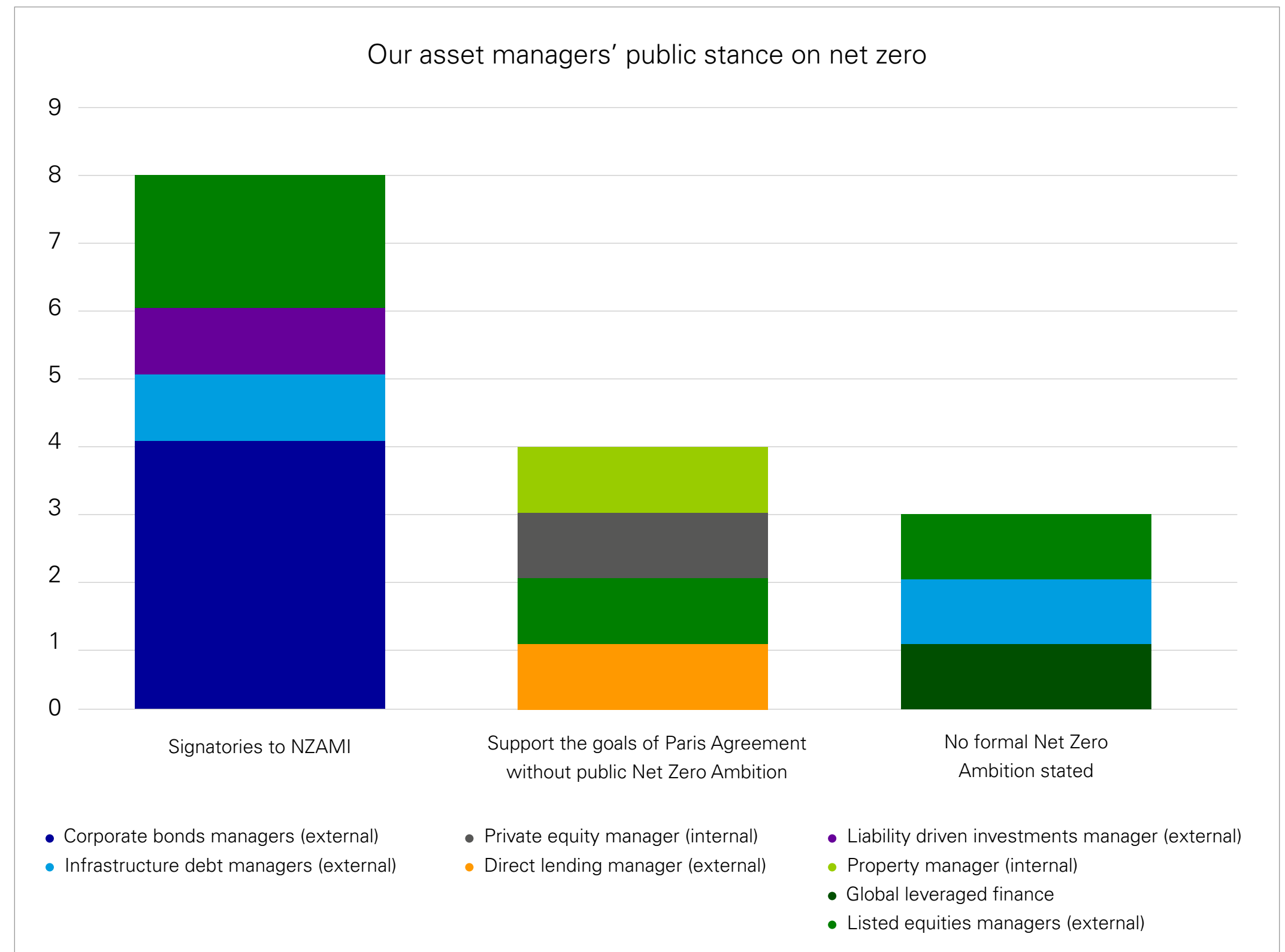
Our asset managers' stance on net zero

Although there has been no material evolution in our asset managers' stances regarding net zero, we observed progress in the way they approach climate change-related analysis and decision-making. More asset managers are now performing scenario analysis to understand potential future impacts of climate change on asset valuations and risks and are using additional metrics that can complement historic emissions data.

Most of our asset managers without a formal net zero commitment are in private asset classes, where the challenge of data availability has to be addressed as a priority. Some of those managers are working actively as part of collaborative engagements towards improving the availability of data for private companies. One of our infrastructure debt managers carried out a net zero review of the underlying investments and found that most companies in that universe had set net zero targets, although with varying timeframes.

We set out more information on how we hold our asset managers to account in the **Manager Selection and Monitoring section** under the Risk Management pillar of this report.

*Net Zero Asset Manager Initiative (NZAMI) is an international group of asset managers committed to supporting the goal of net zero GHG emissions by 2050 or sooner, in line with global efforts to limit warming to 1.5°C; and to supporting investing aligned with net zero emissions by 2050 or sooner. Commitment – The Net Zero Asset Managers Initiative.



Visual 6: The Fund's asset managers' public stance on net zero, including Net Zero Asset Manager Initiative (NZAMI)* commitments.



Climate change and longevity

Climate change can not only influence the risk profile of investments but can potentially impact our lives. As the world gets warmer, the air more polluted and extreme weather events more frequent and severe, life expectancies are likely to change. We expect that climate change impacts on our Fund members' longevity will be affected by many variables, including geographic location, age and access to local sanitary/health services facilities and other utilities.

In the 2022 climate change report, we signposted that we were looking at carrying out an analysis which would allow us to understand better the potential interactions between climate change-related uncertainties and our funding level, including considerations of investment, covenant and longevity risks. Our adviser, the Fund's actuary, has assisted us in this analysis.

In modelling scenarios for mortality impacts, our adviser made use of:

- Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs) as defined by the UN Intergovernmental Panel on Climate Change (IPCC), including estimated projected temperatures.
- Relationships between each SSP and a range of socioeconomic and other variables as published by the UK Climate Resilience Programme, and modelling of how changes to those variables would affect UK mortality rates.

- UK-based climate projections from the Met Office, with correlations between past climate data and mortality rates being used to predict future influences.

In effect, scenarios were modelled on a global scale, with their UK-specific mortality consequences applied to the Fund.

The effects of climate change, and the actions or measures taken by governments, businesses or individuals, will be felt at different times in the future and to different extents. As such, the Fund's exposure to climate change-related risks may develop over time. Based on the range of scenarios modelled, we observed the climate change-related longevity uncertainty to be higher in respect of younger generations, though there could be more funding risk associated with climate-positive scenarios and their implications for improved shorter-term mortality for current pensioners. Key drivers of differences in life expectancies between the scenarios include GDP growth and healthcare provision, in addition to the impact of temperature rises.

Based on this analysis, mortality changes arising from the direct and indirect impact of climate change may be material to funding levels over the longer term. Although analysis conducted to date has not shown for the impact to be significant, we will keep this under review.





Covenant considerations

Employer covenant is an important part of the funding strategy for a defined benefit pension scheme. As such, we consider and, to the extent possible assess, how climate change can be expected to impact our sponsor covenant.

Our covenant risk is determined by two key factors:

- **Surplus:** the larger and more resilient our surplus, the lower the likelihood of additional contributions being needed.
- **Sponsor covenant:** the stronger the covenant, the more likely the Sponsor can support the Fund if assets are insufficient.

Over 2023, our funding level remained strong, and we supported its resilience by continuing our low-risk investment strategy. This includes interest rate risk and inflation risk hedges which aim to reduce funding level volatility. The surplus in our funding position materially reduces the likelihood of future reliance on our Sponsor covenant. However, the market and broader economy are difficult to predict, hence we remain vigilant in our investment risk management and analysis.

In its review of pension schemes' climate change reports, the Pensions Regulator identified the covenant risk assessment as an area for improvement and noted its expectation for covenant considerations to be greater for schemes with sponsors exposed to carbon-intensive activities.

As such, in partnership with Cardano, we looked to expand and strengthen our approach to employer covenant assessment, with climate change being one of the key considerations.

As part of the Fund's 2023 covenant assessment, Cardano considered a number of plausible downside scenarios and analysed hypothetical impacts under various climate change scenarios to understand which of these could lead to the Sponsor covenant being weakened. These scenarios were long term in nature and have no historical precedent, so it is not possible to determine how likely they are, but their related risks could evolve quickly.

In Cardano's analysis, one of the plausible scenarios stemming from climate change risks was a gradual decline potentially arising from a failure by the Sponsor to implement its transition strategy (noting this could also occur as a more sudden 'step change', subject to public policy). This included a failure to diversify its product offering into renewable energy, as well as social changes arising from the energy transition. In this hypothetical example, bp's profitability and cash generation could be materially impacted if it were required, subject to government policy changes, to take economic responsibility for emissions. Additionally, climate change physical risk, such as an increase in weather-related disasters (e.g. flooding, hurricanes, extreme heat stress), could have acute negative impacts on bp's operations.

Cardano rated the overall covenant as 'very strong' taking into account the Fund's funding level and the financial strength of bp. Various downside scenarios were considered in this rating, and Cardano observed that the very strong rating does not mean there is no covenant risk, particularly over the long term with erosion of the surplus or weakening of the sponsor (including as a result of the downside scenarios outlined above) could lead to a weaker overall rating. Since 2019, bp has made significant strides in areas such as biofuel production, installed renewable capacity and electrification, and substantially increased the share of total capital investment allocated to its transition growth engines. bp's financial position remains strong.

Additionally, we recognise that our strong surplus is also a buffer against covenant risk, thus augmenting bp's covenant. We therefore believe we have a low covenant risk in the near to medium term but recognise the uncertainties inherent in predictions of the longer-term future given the nature of bp's operations and the wide range of mechanisms through which it could be affected by climate change.

Risk management

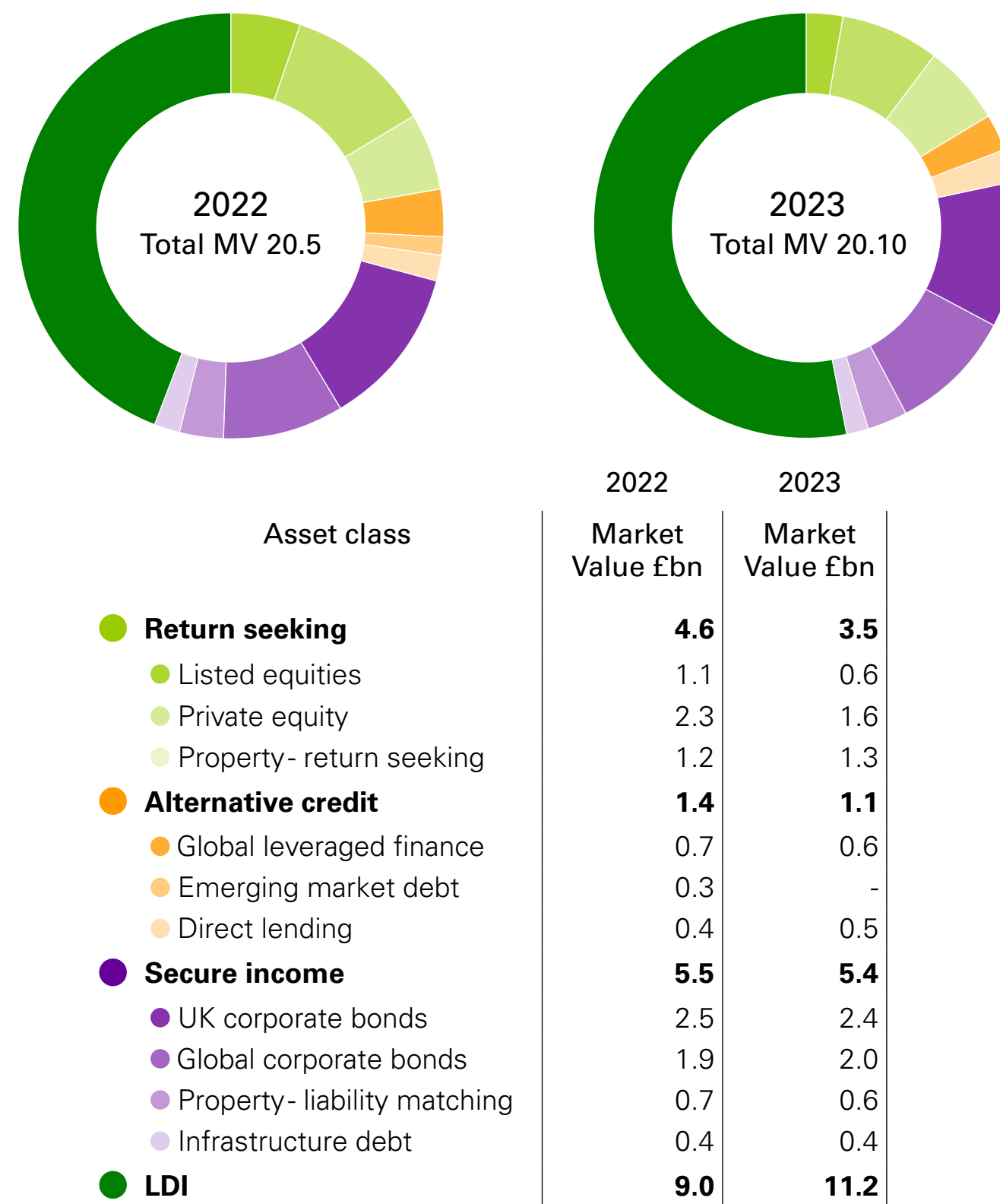
The Fund’s risk management framework and policy are designed to help the Trustee identify and manage the factors that affect the prospects of meeting the Fund’s objectives, especially those factors that affect risks in more than one area. The aim of this framework is to address all types of risks, including ones related to climate change.

We identify and assess the impact of climate change-related risks on the Fund across all areas of our investment process, at both Fund and mandate level, which often corresponds to a specific asset class.

Fund level climate risk management

As part of the incorporation of climate change considerations into our strategic asset allocation, we have carried out a risk assessment via scenario analysis at the asset class level. In addition, we continue to combine internal research, as well as research received from our asset managers, consultants, external data providers, policymakers and industry groups, to determine and assess the climate change-related risks and opportunities which are relevant and impactful to our Fund. Climate change poses both physical and transitional risks, which could affect both the assets and liabilities, as well as our covenant. Physical effects of climate change are expected to cause increasing damage to the world’s economy as extreme weather events become more severe and more frequent, with longer and dryer heatwaves.

As stated earlier in the **Our strategic asset allocation** section, the Fund’s overall de-risking strategy implemented over the past few years has contributed to reducing the Fund’s exposure to climate-related risk. The table on the right shows change in actual market value of the Fund at the end of 2022 and 2023.



Visual 7: The Fund’s actual market value as at 31 December 2022 and 31 December 2023 (excluding central cash).

Asset class level climate risk management

We formally require our asset managers to be aligned with the Fund's SIP, our RI policy and to have regard to the UK Stewardship Code (or an equivalent), all of which cover the management of climate change-related risks and opportunities.

We have established a thorough manager selection and monitoring process which allows us to gain a comprehensive understanding of each manager's responsible investment policies, processes, and level of implementation and consideration of climate change-related risks and opportunities.

We closely monitor our managers' climate change-related stewardship and engagement activities to confirm they engage directly and collectively for both information and change. The managers we select have clearly stated investment processes which encompass multiple disciplines. Climate change-related metrics form a major part of the ESG factors incorporated alongside the main financial and performance metrics they review when they are carrying out analysis and make investment decisions on our behalf.

We believe engagement and a forward-looking assessment of climate change risk can bring better outcomes than exclusions or divestment, and we require our managers to review investments in detail from a climate change risk perspective.

We expect our managers to assess companies and their business strategies, including their approaches to the energy transition and physical risks. We note that if addressed proactively, such strategies can also represent potential investment opportunities.

Manager selection and monitoring

When assessing prospective asset managers, we review how climate change is considered from a long-term risk management and valuation perspective, including how it is integrated into investment processes, business focus, operational infrastructure and engagement activities. We also consider whether our managers have appropriate resources to analyse and understand how climate change could impact investment returns and to take the steps we would expect of them.

Some specific ways in which we promote the integration of climate change include the following:

- **Asset manager mandates**

Our investment mandates with each asset manager requires them to comply with our RI policy, as we expect our managers to take appropriate steps to integrate potentially material ESG factors, including climate change and our two other priority stewardship themes, into their investment analysis, investment decision-making and engagement activities with investee companies or issuers.

- **Segregated mandates and pooled investment funds**

We review the investment objectives and guidelines of pooled funds to align with our investment policies, including our RI policy. For segregated mandates, we set guidelines on climate change expectations to fulfil our NZA within our mandates where it is appropriate to do so. At present, all the Fund's investments are under segregated mandates.

- **Engagement & exclusions**

When it comes to our exposure to carbon-intensive sectors, we favour engagement over exclusion and do not have an exclusion policy (except for restricting our managers from investing in securities issued by our Sponsor, which is to limit our further exposure to bp). We also comply with all relevant sanctions legislation with regards to any investments and/or divestments that we make.

Our managers may have firmwide restrictions linked to internal policies and/or regulations they need to abide by in certain markets in which they operate, such as exposures to controversial weapons (for instance, cluster munitions, depleted uranium and anti-personnel land mines), tobacco, coal or recreational cannabis.

- **Assessment period**

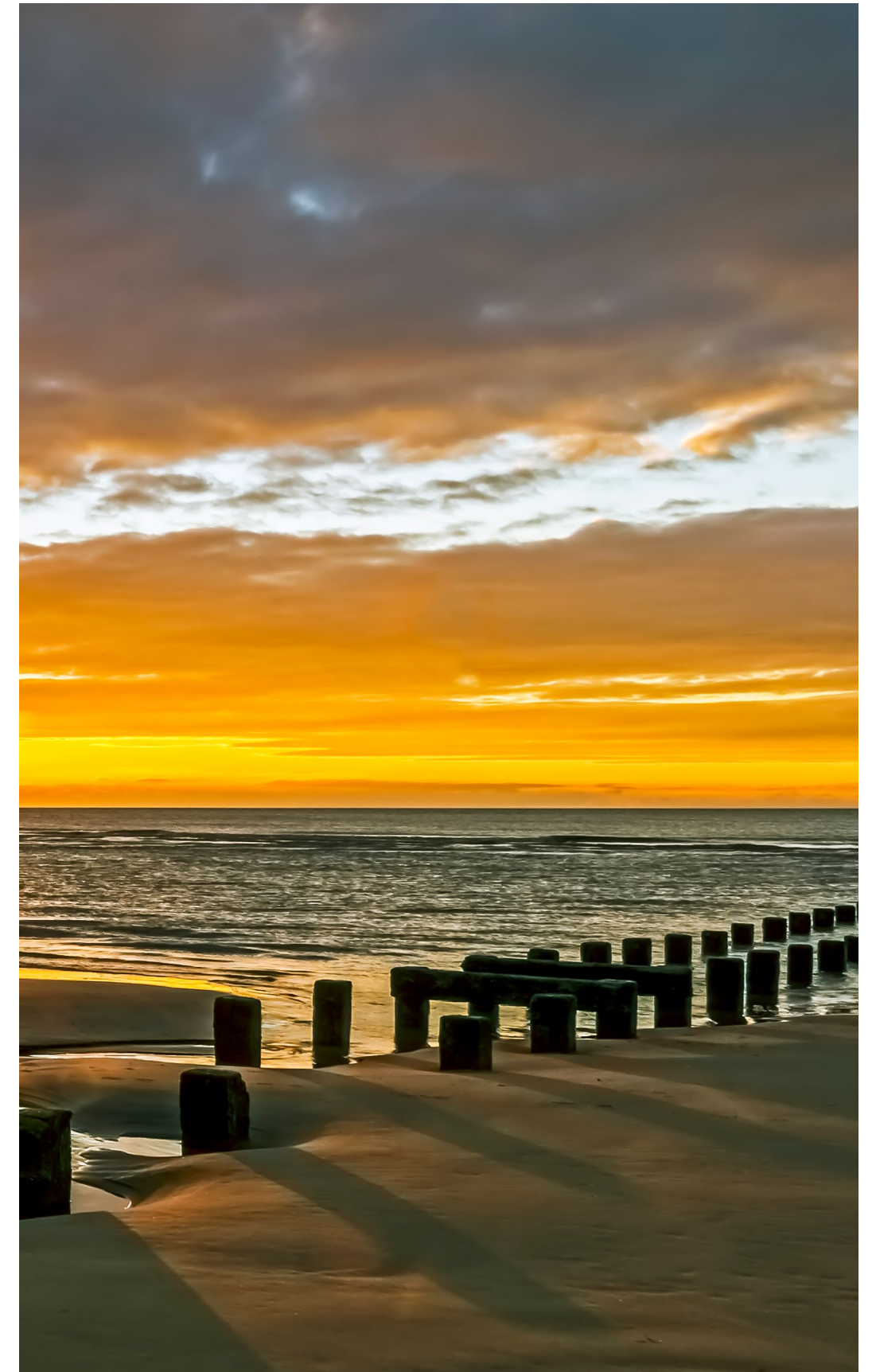
We appoint asset managers with the expectation of a long-term partnership which encourages active ownership of the Fund's assets. When assessing a manager's performance, the focus is on longer-term outcomes and is assessed over a medium to long-term timeframe, subject to a minimum of three years.


Our ongoing engagement with asset managers, and thorough monitoring of their investment and stewardship activities, are key in enabling us to assess and manage climate change and other ESG-related risks in our portfolio. By requiring our managers to comply with our RI policy, we have set clear expectations, and subsequently hold them to account, on how their actions contribute to achieving the goals of the Paris Agreement, drive positive change towards real economy decarbonisation and help to improve long-term, risk-adjusted returns for the benefit of our members.

We hold quarterly investment review meetings with our managers to discuss their investment performance and receive updates, including those relating to business or personnel developments. We include stewardship as a standing agenda item with a focus on engagements around climate change and our key themes.

In order to gain a comprehensive understanding of each manager's responsible investment policies, stewardship and management of climate change, we also hold annual responsible investment review meetings with our managers. These meetings form an important part of our manager monitoring process, covering each manager's investment, stewardship and climate change management and metrics monitoring for the prior 12 months. In particular, there is a focus on our managers' stance on net zero and their engagements with companies or issuers which represent a higher share of financed emissions in our mandates. Through questionnaires completed prior to the meetings, and in the meetings themselves, we continue to monitor progress in ESG integration, stewardship and climate change risk management across all asset classes and mandates.

Looking at industry-level initiatives and feedback gathered internally within the investment team, every year we seek to improve the data gathering we perform through our questionnaires. We seek to limit the reporting burden while seeking an appropriate level of detail. We are pleased that our process generally helps managers identify areas for improvement.





Climate change-driven investment activities

We encourage our managers to present us with investment opportunities and development initiatives which deliver good risk-adjusted returns for the Fund and help to address climate change risks and identify opportunities. We are finding that these are increasingly aligned with those that support and positively contribute to the low-carbon energy transition. We also believe that there is substantial scope for investment in infrastructure to help improve resilience to physical risks.

More widely, we set out below examples of progress made within particular mandates during 2023, assisting in our overall approach:

Infrastructure debt

Our infrastructure debt manager is developing an approach to analyse and report climate-related risks within its debt portfolio. Where appropriate, the manager directly engaged with borrowers during the reporting period to understand their approach to physical and transition risks. The manager also engaged with key equity sponsors to obtain any scenario analysis that had been conducted on the assets.

The manager is currently conducting physical and transition scenario analysis for key sector and geography combinations with the aim of identifying key risks and opportunities across the portfolio.

Beyond scenario analysis, climate-related risks are also considered during the due diligence process for each asset. Where these are assessed as material, the manager takes further action to understand the risks, such as conducting enhanced due diligence or sourcing additional analysis from third-party providers.

Corporate bonds

During 2024, we will continue a dialogue with our corporate bonds managers on the options to integrate a net zero target into our mandates.

One of our corporate bonds managers notes positive environmental impacts through investing in bonds issued by certain companies to finance subsea cables that connect offshore wind farms to the electricity grid, providing a substantial environmental benefit. Despite not having a green label, these bonds offer attractive features such as strong security, clear covenants and predictable cash flows, making them appealing additions to investment portfolios, especially when compared to some green-labelled utility bonds. Another one of our corporate bonds managers has also invested in green bonds as it felt the ratchets were significant and aligned with the issuer's strategy and decarbonisation plan.

Property

Over 2023, our property manager achieved notable progress in its commitment to environmental sustainability, as evidenced by advances in its net zero action plan, with 13 photovoltaics projects across the portfolio – at different stages of development – and two electric vehicle projects to be completed shortly. A key aspect of the net zero plan consists of improving ESG data collection and analysis. This is done via Siera – a sustainability data management platform developed by Evora – and engagement with relevant tenants. The engagement project started in 2023 with the three largest retail tenants in the liability matching portfolio.

Our property manager is also considering initiatives to improve impacts on biodiversity. It will partner with JLL Sustainability Services, with the goal of leveraging the nature tool the manager is developing to help demonstrate how assets interact with nature and determine which assets are particularly critical from a nature perspective.

Finally, four of our properties were submitted this year for the Green Apple Awards 2023, which saw us collecting four wins in November (one gold and three commended).



Managing climate risk through active ownership

Stewardship

Stewardship is a key component of our risk management framework, as we see engagement, active ownership and industry involvement via trade associations and working groups as being a crucial part of risk identification, management and monitoring processes. From the asset owner's perspective, engagement carried out by our managers is an important part of climate change risk management and we encourage our managers to focus their efforts on engagements related to climate change risks and disclosure. In 2023 we successfully obtained signatory status to the 2020 UK Stewardship Code.

Voting

Another key lever we use to influence investee companies is voting at shareholder meetings, including annual general meetings. By investing through segregated mandates across all our listed equities portfolios, we retain the right to directly exercise the voting rights attached to our holdings. Where possible, we use voting rights to encourage responsible long-term behaviour and enhance reporting and management on climate change by the companies in which we invest.

We view voting as an important investor right which allows us to express our position on critical issues (e.g. topics related to our engagement stewardship priorities).

Collaborative engagement

The Fund has been a signatory to the United Nations-linked Principles for Responsible Investment (PRI) since 2008. Additionally, to broaden our membership of responsible investment and climate-related focus groups, in 2022 we joined the Department for Work and Pensions' Occupational Pensions Stewardship Council (OPSC) and the Institutional Investors Group on Climate Change (IIGCC). Over the course of 2023 we participated in the climate change and private markets workstreams to share our insights and understand best practice approaches including those in relation to shareholder resolutions and climate change reporting. During 2023, we also participated in the IIGCC working group focused on sovereign bonds and country pathways, which was working towards publishing a paper on the topic in 2024.

Example of our direct engagements related to climate change risk

Encouraging an asset manager to join PRI and strengthen their ESG integration and engagement process (infrastructure debt)

Context: We engaged with one of our infrastructure debt managers to encourage them to become a signatory of the PRI and formalise a process for integrating ESG, including climate change, into their investment process. Additionally, although ESG considerations formed part of the manager's due diligence process, we felt they had been reluctant to participate in stewardship efforts in relation to the assets owned, particularly with respect to water companies.

Action: Over the year, we engaged with the manager on their efforts to become a signatory to the PRI, to develop a formalised ESG integration process and to address their lack of engagement with water companies, especially given concerns around pollution by some of these companies. Resourcing had been cited as the primary reason for the lack of progress and minimal stewardship activity given the manager's small size. However, we argued that a shift in mindset was necessary for the manager to align to our RI policy. We suggested considering hiring specialist resource, utilising a specialist adviser or participating in collaborative working groups to help drive progress.

Outcome: The manager has made good progress over the course of 2023, having become a signatory to the PRI and having formalised their ESG integration process including the introduction of a credit impact score. We look forward to hearing how the manager harnesses the PRI's resources as a new signatory and hope they can take a step forward in relation to their stewardship activities, especially in relation to engaging water companies on pollution-related issues.



Example of our managers' engagements related to climate change risk

We request our asset managers to lead meaningful engagements with companies we have exposure to in our portfolio, on matters related to our stewardship themes, one of which is climate change. Below we highlight examples of our managers' direct and collaborative engagements.

Targets for reducing emissions through Climate Action 100+

Engagement led by Royal London Asset Management

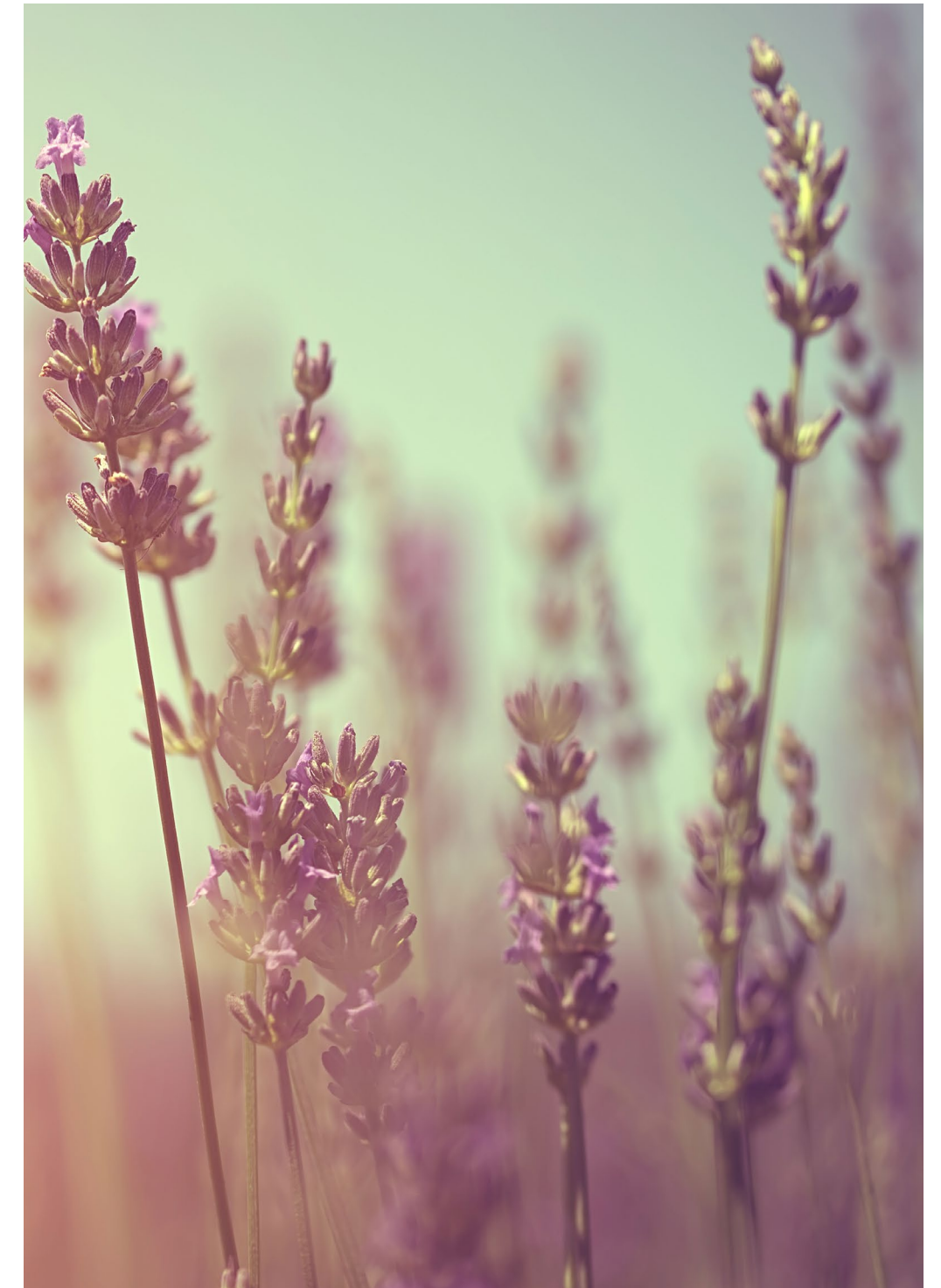
Asset class: UK corporate bonds

Context: As part of its Net Zero Stewardship Programme and in accordance with its Net Zero Asset Managers Initiative commitment, the manager aimed to scrutinise and engage with companies that account for 70% of the emissions financed by 2030. The goal was to encourage these companies to adopt targets for reducing emissions and plans for transitioning to a climate-friendly model, all backed by scientifically sound methodologies. The intention of this strategy was to drive decarbonisation in the real economy.

Action: The manager, as a participant in Climate Action 100+, engaged with the integrated energy company on corporate lobbying and noticed potential inconsistencies between the responses to the EU consultations from the company and its subsidiary. The company clarified that its subsidiary was advocating for more policy options rather than opposing proposals.

The manager plans to continue engagement on climate and broader ESG issues due to the company's significant role in the transition. During the CA100+ engagement, the focus was on enhancing the company's emissions targets, reducing Scope 1 emissions, and refining disclosures related to various environmental factors.

Outcome: The company has established new goals to decrease its Scope 1 emissions from power production by 60%, 70% and 80% by the years 2025, 2030 and 2035 respectively, using 2017 as the reference year. The company has already cut its Scope 1 emissions in half between 2017 and 2022, and also provided more details about its 'net zero by 2050' objective, confirming that it encompasses Scope 3 emissions, which make up nearly 80% of its current emissions. The goal involves reducing emissions by a minimum of 90%, with the remaining 10% being offset through high-quality carbon removal projects post-2030.





Metrics and target

Data quality and availability

We continued engaging with our external managers through the year to understand how they approach emissions data limitations and improve their climate-risk management and reporting. All 15 managers reported some level of emissions metrics for their respective portfolios, with 13 managers doing so via our annual RI questionnaire. Listed equities, corporate bonds and LDI managers used a mixture of estimations and reported emissions, depending on their selected provider. Our private equity manager provided estimated metrics based on the MSCI Total Portfolio Footprint methodology which uses the Partnership for Carbon Accounting Financials (PCAF) standards (see **Appendix 1** for details). We were also pleased to see our global leveraged finance manager partnering with a carbon accounting software firm, which also follows PCAF standards, to establish its financed emissions metrics baseline.

Since last year we have also been monitoring and disclosing Scope 3 emissions data, representing indirect emissions released in the value chain of companies. Disclosure of Scope 3 emissions is currently quite limited with very few issuers reporting it regularly.

This means almost all Scope 3 emissions are based on estimation models and assumptions linked to sectoral and geographic information. Some issuers revert to estimation themselves, rather than relying on factual monitoring of emissions in their value chains.

We continue to use MSCI as our emissions data and emissions metrics provider. We use MSCI ONE Climate Lab Enterprise to calculate emissions for listed equities and corporate bonds. For illiquid and private asset classes we worked with MSCI to obtain estimated emissions based on their Total Portfolio Footprint service, which provides PCAF model-based estimates.

Our efforts towards improving data quality

We remain conscious of limitations in both the availability and quality of data necessary for accurate emissions metrics calculations and reporting. As such, we continue to engage with our managers on this topic, pressing them to increase their efforts in urging more investee companies and issuers to track and disclose their emissions data across the three scopes.

In addition to data availability, we believe it is necessary to highlight one further issue which concerns the different timelines of the datapoints used to calculate the carbon footprint and the risk that the 'as at' dates of the emissions levels and their values of holding positions are materially different from each other. This means that even basic emissions metrics should be considered as proxies rather than exact values. For the purpose of this and past reports, we based our emissions metrics on our provider's standard model, which uses the most up-to-date datapoint available for each factor. We will consider our preferred approach going forward.

We believe that data providers have an enormous role to play in improving the quality and availability of not only emissions, but broader ESG and financial data. We maintain an active dialogue with MSCI as our data provider on ways they can help in this area, and through our own research and analysis seek ways in which we can challenge MSCI on their approach and progress, and ultimately play a part in improving the overall data quality.

Listed equities

Financed emissions metrics for listed equities based on investor allocation

Listed equities strategy	Scopes 1 and 2				Scope 3 U: Upstream / D: Downstream		
	Portfolio			MSCI ACWI	Portfolio		MSCI ACWI
	2021	2022	2023	2023	2022	2023	2023
Absolute finance emissions metric							
Total financed GHG emissions in thousands of tons CO ₂ e associated with investee companies in the portfolio. Based on an equal portfolio and benchmark investment.							
Active	147	32	8	28	U 68 / D 207	U 39 / D 65	U 52
Passive		24	10		U 69 / D 148	U 32 / D 78	D 146
Financed emissions intensity metric							
Financed GHG emissions in tons CO ₂ e per US\$ million invested.							
Active	47	46	17	57	U 99 / D 301	U 77 / D 130	U 103
Passive		41	41		U 115 / D 247	U 134 / D 328	D 291
Financed emissions data coverage							
Includes emissions data which is reported by company or estimated by MSCI.							
Active	98%	100%	100%	100%	98%	99%	99%
Passive		100%	100%		99%	99%	

Source: MSCI Carbon Footprint Calculator, based on position data as of 29.09.2023.

Note 1: MSCI ACWI benchmark used for comparison for active and passive listed equity mandates.

Note 2: GHG emissions are apportioned across all outstanding shares and bonds (% EVIC).

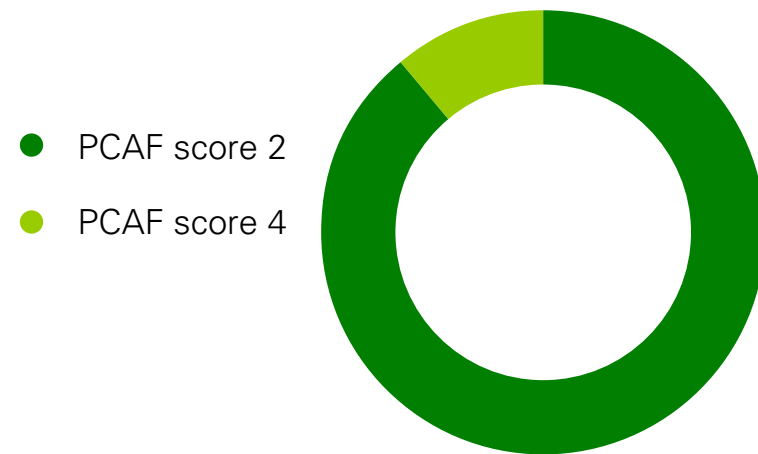
Visual 8: Listed equities financed emissions metrics.

As at 31 December 2023, listed equities made up 3% of our total portfolio. Similar to last year's report, we have split the emissions metrics for listed equities across the active and passive strategies, given they are managed to different benchmarks.

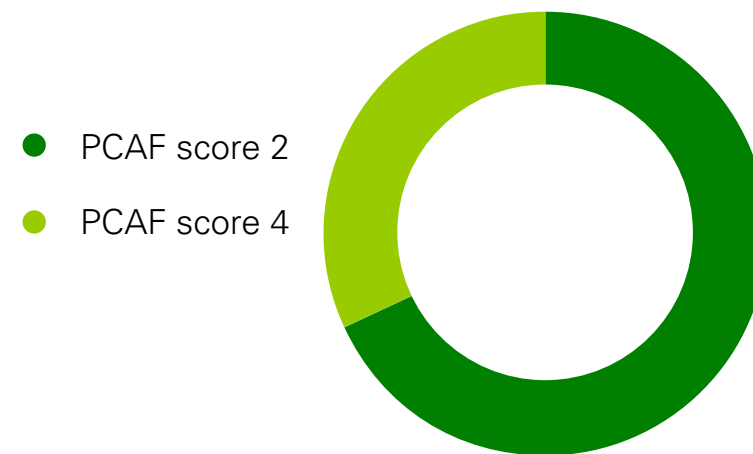
The level of absolute financed emissions metrics for listed equities has dropped significantly between 2022 and 2023, decreasing from 56,000 CO₂e tons at the end of 2022 to 18,000 CO₂e tons at the end of Q3 2023, largely driven by the reduced allocation to these strategies. Similarly, we also observed reduction in the emissions intensity metric, which is assessed per million invested, for the active listed equities, from 46 tons of CO₂e per million \$ invested at the end of 2022 to 17 tons of CO₂e per million \$ invested at the end of Q3 2023. This change primarily results from the Fund's disinvestment from one of the active managers which happened to have relatively significant exposure to high-emitting companies.

Quality of emissions data for listed equities

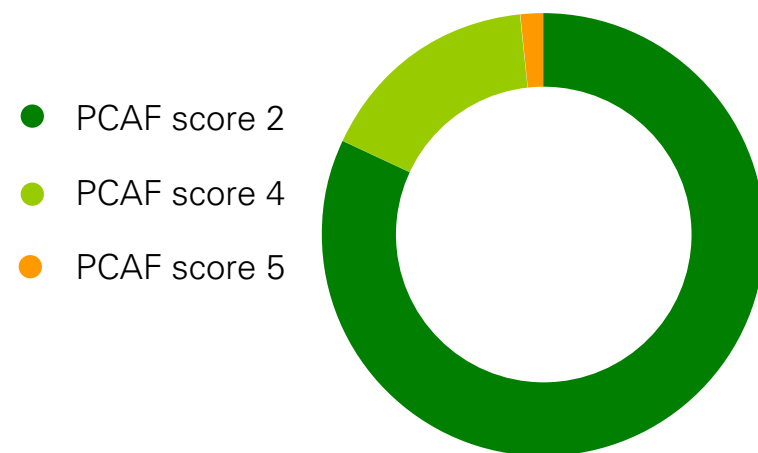
**Active Listed Equities
Data quality by % issuers
(Scopes 1 & 2)**



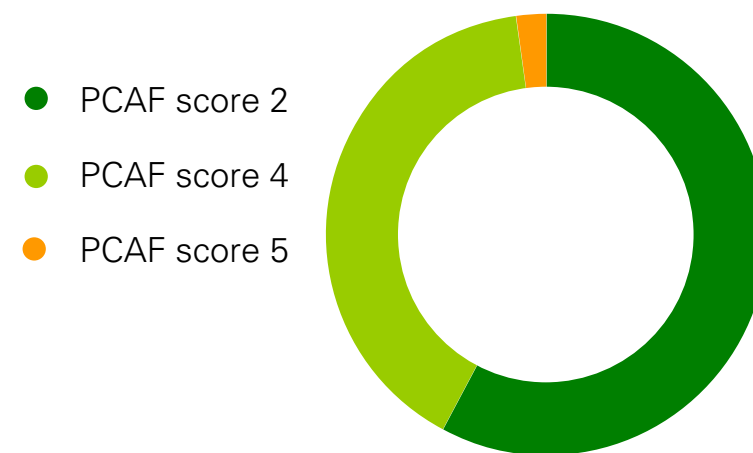
**Active Listed Equities
Data quality by % issuers
(Scope 3)**



**Passive Listed Equities
Data quality by % issuers
(Scopes 1 & 2)**



**Passive Listed Equities
Data quality by % issuers
(Scope 3)**



Within the emissions metrics calculations the Enterprise Value Including Cash (EVIC) is used to normalise our level of investment and obtain a fair share of emissions associated with them. Based on the MSCI methodology, emissions are either reported or estimated (based on PCAF-aligned models) using either company-specific data or sectoral-geographic models when reported data is not sufficient. Similar to 2022, the coverage of MSCI data quality for Scopes 1 and 2 emissions for 2023 remained at 100%. Including Scope 3 data, coverage also remained at 100%. The estimates were done either using models based on prior reported data or based on sector trends.

In terms of data quality reporting, this year we moved to the PCAF data quality scores (see detailed explanation in **Appendix 1**). The data quality metric below represents the MSCI emissions data only. Overall, we can see that the majority of the Scopes 1 and 2 emissions data we have coverage for are of high quality, being either reported emissions or highest-quality estimates. Scope 3 data quality is lower, with a higher proportion of emissions calculated using weaker estimates (PCAF scores 4 and 5). The goal is to source all data from reported emissions that have been verified (score of 1). Monitoring the PCAF score over time will allow us to assess improvements in the quality of emissions data.

Visual 9: Quality of emissions data for listed equities.

Corporate bonds

Financed emissions metrics for developed markets corporate bonds based on investor allocation and inclusive of subsidiary mapping

Corporate bonds	Scopes 1 and 2			Scope 3 U: Upstream / D: Downstream	
	Portfolio			Portfolio	
	2021	2022	2023	2022	2023
Absolute financed emissions metric					
Total financed GHG emissions in thousands of tons CO ₂ e associated with investee companies in the portfolio. Based on an equal portfolio and benchmark investment.					
Global	256	74	111	U 147 / D 580	U 183 / D 695
UK		49	67	U 110 / D 298	U 190 / D 441
Financed emissions intensity metric					
Financed GHG emissions in tons CO ₂ e per US\$ million invested.					
Global	31	40	51	U 80 / D 313	U 85 / D 322
UK		35	27	U 80 / D 216	U 76 / D 177
Financed emissions data coverage					
Includes emissions data which is reported by company or estimated by MSCI.					
Global	40%	89%	88%	89%	88%
UK		56%	53%	56%	52%

Source: MSCI Carbon Footprint Calculator, based on position data as of 29.09.2023.

Note 1: Benchmark GHG emissions data not included due to licensing limitations.

Note 2: GHG emissions are apportioned across all outstanding shares and bonds (% Enterprise Value including cash).

Visual 10: Corporate bonds financed emissions metrics.

As at 31 December 2023, developed markets (DM) corporate bonds accounted for around 22% of the total Fund's assets under management (AuM). For the corporate bonds asset class, it is important to note that the data coverage has increased substantially compared to previous reports. This is a positive development, but we note it means any comparisons made with older data will require careful interpretation since the scope of the assets covered has substantially increased.

In terms of financed emissions metrics, we observed an increase for both global and sterling corporate bonds compared to 2022 and a reduction from 2021. In addition to the increased scope of issuers covered, we also noticed an increase in the financed emissions intensity metric for the global corporate bonds, which is linked to an increase in exposure to utilities sector, as well as market valuations. The intensity figure remained constant for the sterling corporate bonds.

Quality of emissions data for developed markets corporate bonds

Overall, when we review the data quality metric, we can see that the majority of the Scopes 1 and 2 emissions data has a lower percentage of emissions coming from reported or robust estimations as per PCAF's rating (score 2) compared to listed equities, with more data estimated using weaker methodologies. Scope 3 data quality is also lower, with a higher proportion of emissions calculated using sectoral and geographic estimates (PCAF scores 4 and 5).

It is clear that the data quality for corporate bonds is lagging compared to listed equities. This is a clear signal for more effort in engagement with debt issuers. We continue to address this as part of our manager monitoring process, as described above in the risk management pillar.

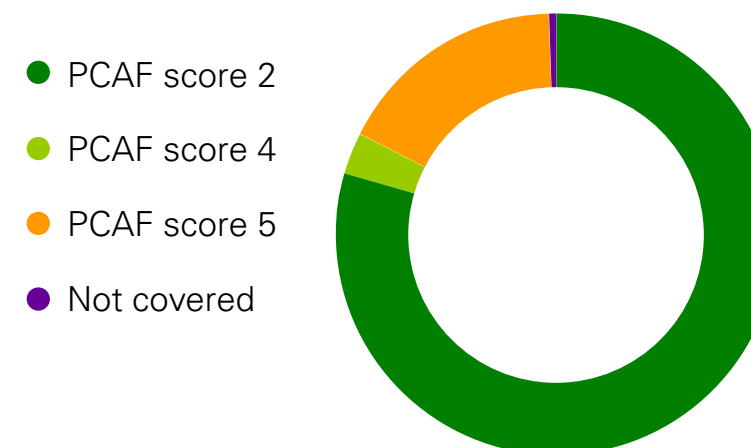
- **Subsidiary mapping**

The quantum of the corporate bonds data coverage still depends significantly on the mapping approach taken when considering emissions of specific smaller private issuers, which are subsidiaries of larger firms. This in turn affects the associated level of financed emissions metrics for the portfolio. Sometimes these associations are straightforward – i.e. capital market special purpose vehicles (SPV) established only to raise capital for the controlling entity – while in other cases these are separate entities covering specific sectors which would need their own reporting.

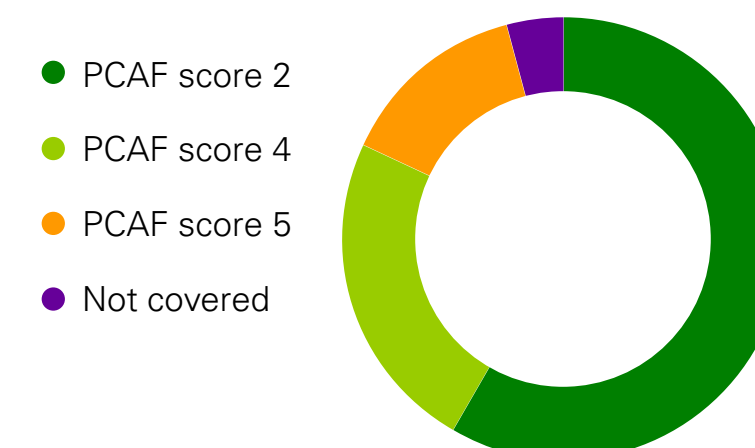
- **Magnitude of issuers' count and size**

With a significantly higher number of issuers compared to listed equities (over 600 vs less than 400) and more companies of a smaller size, it is not surprising that over 10% of companies across our corporate bonds mandates do not report emissions and are not covered yet by the MSCI estimation model. The quality of data further decreases when including Scope 3 emissions, as all Scope 3 emissions are estimated either by underlying companies, or our data provider MSCI.

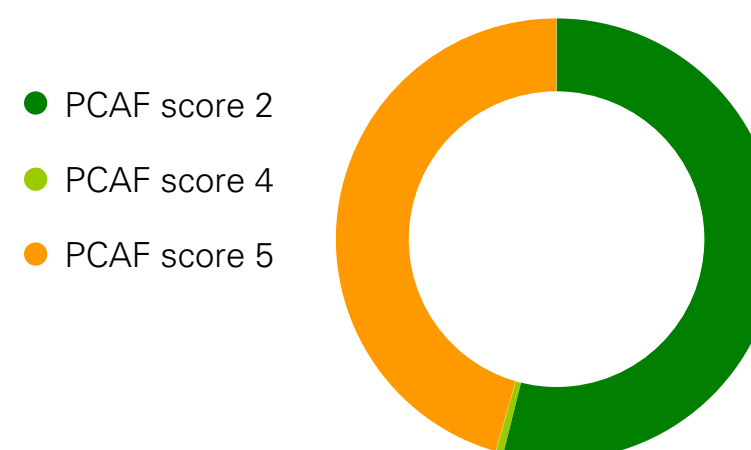
**Global Corporate Bonds
Data quality by % issuers
(Scopes 1 & 2)**



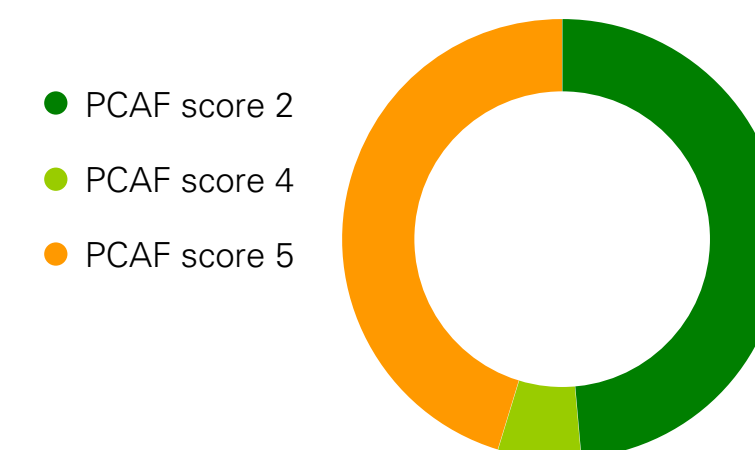
**Global Corporate Bonds
Data quality by % issuers
(Scope 3)**



**Corporate Bonds UK
Data quality by % issuers
(Scopes 1 & 2)**



**Corporate Bonds UK
Data quality by % issuers
(Scope 3)**



Visual 11: Quality of emissions data for corporate bonds.

Liability-driven investments

Estimated LDI financed emissions metrics

Absolute financed emissions metrics in thousands CO ₂ e tonnes	Type of exposure	Gilts MV (£m)	Absolute emissions tCO ₂ e (1,000)
The absolute financed GHG emissions metric (Market Value (MV) gilts / MV gilts in issuance x CO ₂ e), is based on the annual data for emissions produced in the UK (Scopes 1 and 2) as at 31 December 2022 published by the UK government*, of 417.7m tonnes of CO ₂ e. Scope 3 emissions are not included.	Funded	9,823	1,598
	On repo	5,374	874
	Total	15,197	2,472
Financed emissions intensity per £m invested	Emissions intensity tCO ₂ e/£m		
Total market value of gilts in issuance as at 29 December 2023 of £2,335.6m (including green gilts)	179		
Weighted average carbon intensity (WACI)	WACI tCO ₂ e/GK\$m PPP-adjusted GDP		
UK PPP-adjusted GDP estimates for 2022, published by the IMF, GK\$**3,716.6m	112		

Source: Insight, 2023 Q4 report (metrics estimated based on PCAF methodology of using WACI x MV tCO₂e).

*Provisional UK GHG emissions national statistics 2022- GOV.UK (www.gov.uk)

Note: Gilts posted out as collateral by the Fund are included in the gilt valuations, while gilts received as collateral are excluded. Interest rate swaps, inflation swaps, futures, cash and money market/fund holdings have all been excluded.

** Geary-Khamis dollar (GK\$) is a hypothetical unit of currency that has the same purchasing power parity that the US dollar had in the United States at a given point in time.

Visual 12: LDI financed emissions metrics.

LDI continues to be the core component of the Fund's investment strategy and its protection mechanism against key risks such as interest rates and inflation. The primary instruments used within our LDI portfolio are UK conventional and index-linked gilts, which aim to hedge the interest rate and inflation sensitivities of the Fund's liabilities.

The key limitations for assessing emissions associated with gilts remain the following:

- gilts are held for liability-matching purposes and therefore asset-only measures of gilt emissions may provide a misleading picture of the Fund's climate-related risks.
- total UK emissions data includes corporate and household as well as the government's emissions, making it difficult to isolate government-only emissions.
- processing imported and exported carbon emissions data (exporting countries retain carbon responsibility for production, even if the goods are used elsewhere).

The following metrics have been calculated by our LDI manager based on the total gilt exposure in the portfolio as at 31 December 2023. As consistent methodology is not yet available, it is important to note the sources, assumptions and approach used by our LDI manager based on their understanding and interpretation. In light of the limitations mentioned above, these emissions should not be aggregated with emissions data for other asset classes.

It is important to reiterate the risk of double-counting emissions (i.e. corporate emissions might be recorded for gilt holdings as well as corporate bonds holdings, due to the broad coverage of total UK emissions data mentioned previously) and the potential exclusion of 'imported' emissions. Additionally, with most asset classes, emissions data is released with a time lag; therefore, while our gilt exposure is as of 31 December 2023 the emissions are for 31 December 2022.

Other asset classes

Calculating financed emissions metrics for asset classes other than listed equities and corporate bonds continues to be challenging since data disclosure across private companies remains particularly low. However, our external managers all provided reassurances that they have noticed a positive trend in disclosures, especially among UK and European companies.

Having said this, the level of reporting remains low, and we will continue engaging with our managers on how to improve on this.

During 2023, we performed the carbon footprint analysis of all other asset classes via models and tools collaborating with our current provider (i.e. MSCI) also to maintain consistency for estimation models.

Private equity, infrastructure debt, direct lending & leveraged finance

During 2023, we obtained financed emissions metrics estimations for some of our private/illiquid portfolios based on MSCI Total Portfolio Footprint model which follows the PCAF standards. We included in this analysis the following asset classes: private equity, direct lending and global leveraged finance, which represented on aggregate 13.2% of the Fund AuM as at the end of 2023. This analysis was first done as part of the broader exercise to understand the level of financed emissions for the Fund as of 31 December 2021 (the point in time we use as our baseline for our NZA and overall climate metrics analysis) and repeated in 2022 and 2023.

The financed emissions metrics we obtained were all estimated based on economic data – such as sectoral revenues and asset turnover ratios. Therefore, from a data quality perspective, they fall under the PCAF data quality score of 5 which, similar to last year, speaks to the low level of confidence in those numbers at this stage.

Nonetheless, as a result of the secondary sale of part of our private equity portfolio, we did notice an overall reduction in absolute financed emissions metrics from this asset class as the divestment clearly impacts our exposure and, therefore, our associated emissions.

Property

Our property portfolio is managed by BPIM and combines the return-seeking (RSA) and liability-matching (LMA) assets. In our combined portfolio we have approximately 84 assets which are split between RSA and LMA funds, developments and joint ventures. In 2023, BPIM instructed agent EVORA to calculate the total emissions of the portfolio as at the end of 2022 with a year lag, which is typical for property assets. Due to general market challenges in the data collection process, emissions also included established market estimates based on the size and type of properties within the portfolio.

The table below summarises the whole building electricity and gas emissions (Scopes 1 and 2), the tenant electricity and gas emissions (Scope 3) as well as the Fund carbon intensity. Scope 3 emissions account for 65% of all portfolio emissions.

Estimated total absolute emissions	Whole Building Electricity and Gas Emissions (tCO _{2e})	Tenant Electricity and Gas Emissions (tCO _{2e})	Fund Carbon Intensity (kgCO _{2e} /m ² /year)
Property portfolio	32,564	17,396	62

Visual 13: EVORA estimates of the property portfolio emissions.

Additional climate change metric

Data quality process metric

Our third climate metric is a data quality process metric which represents the proportion of the Fund's investments by market value for which we carried out preparatory portfolio alignment analysis. Last year we set a target for this metric to be 100%, which meant we aimed to cover the last two remaining asset classes – sovereign debt (including LDI) and property.

During 2023, we worked with Ortec to understand the data requirements and underlying methodology for those two asset classes.

Sovereign debt: Ortec ran their ClimateALIGN model for our sovereign exposures (LDI and sovereign debt in our corporate bonds mandates) and we analysed the metrics for holdings as at 30 September 2023.

- As expected, the results of the analysis are almost entirely driven by our sovereign debt exposure to the UK, with the remainder represented by smaller exposures to the US, Italy, Mexico and Switzerland.
- Each of those countries report their emissions and have set their NDC (nationally determined contribution) targets and as such, the data coverage was 100%.

- The outcome of this analysis implies that all issuers in our sovereign debt exposure are aligned to the goals of the Paris Agreement, given their level of alignment falls within the 'well below 2°C' bucket.
- However, since the methodologies for assessing sovereign debt from a climate change perspective are still developing and are not universally consistent, we decided not to report the metrics from this analysis in this climate change report and will continue to monitor those alignment metrics on an annual basis.

Property: We discussed with Ortec and BPIM the underlying assumptions of the alignment model and data requirements for our property asset portfolio.

- Given the lack of required input data, presented in a cohesive manner, the alignment analysis would need to be run using estimated parameters from a third-party provider (i.e. average estimated emissions of UK-based property depending on the tenant's sector).
- In practice, the results of such analysis would be significantly skewed to the alignment score of the country in which the properties are located (in our case, the UK) and would offer little insight into our property investments' alignment with the goals of the Paris Agreement.

- BPIM has a project under way with a third-party provider to collect and enhance the quality of data for all assets in the property mandate. This means that, to the extent possible, we could also incorporate additional data points which, as we learned through the preparatory portfolio alignment analysis, are required to calculate alignment metrics for real assets.
- The above project is progressing, and once the dataset is available and deemed sufficient, we will look to calculate the alignment metrics for assets in the property portfolio. These metrics will be key in evaluating the level of alignment of the overall property portfolio with the goals of the Paris Agreement, which is a necessary step towards meeting our NZA.

The table below shows asset classes we covered as part of the preparatory portfolio alignment analysis across the three years.

Data quality process metric coverage across asset class			
Asset Class	Climate change report for the year		
	2021	2022	2023
Listed equities	Y		
Corporate bonds (global and UK)	Y		
Leveraged finance		Y	
Infrastructure debt		Y	
Direct lending		Y	
Private equity		Y	
Property			Y
Sovereign bonds (excluding LDI)			Y
LDI (UK gilts)			Y
% MV covered in particular year	27%	15%	58%
Total % MV covered up to date	27%	42%	100%

Visual 14: Climate data quality process metric across the three years of reporting.



Alignment metrics

While we appreciate the use of alignment metrics could help us understand the direction of travel regarding our NZA and help us identify action points for engagement at an issuer level, we are aware of the current limitations these indicators have and will be cautious on how to interpret their results.

The alignment metrics criteria are affected by a significant level of uncertainty*. First and foremost, the very quantification of the carbon budget** needed to establish the future emission pathways, so important for these metrics, is itself a challenging exercise. The levels vary substantially, and its estimations will evolve in the future as emissions data become more widely available and the understanding of certain geophysical variables improves. Secondly, forecasting the impacts on emission levels of future regulatory and technological developments and their implementations, based on today's knowledge and expectations, is even more complex and potentially unreliable.

Data quality for alignment metrics

For this year's analysis, additional attention has been paid to ensuring sector attribution at the individual holdings level was as accurate as possible, as we found this was the main driver for the lower data coverage for corporate bonds last year. This exercise required matching issuer identifiers between our system and our provider – this resulted in achieving much better coverage.

Additionally, this year we were able to obtain issuer-level details on the quality of underlying data used for alignment metrics, differentiating between reported and proxied input data, as well as detail around the granularity of proxy information.

Strategy	Data quality		Proxy level granularity based on NACE*** sector classification and region		
	Reported	Proxied	NACE 2 level, same region	NACE 1 level, same region	NACE 1 level, global region
Active listed equities	81%	19%	45%	50%	5%
Passive listed equities	65%	35%	32%	47%	21%
Global corporate bonds	74%	26%	38%	46%	16%
UK corporate bonds	32%	68%	42%	52%	7%

*[Measuring Portfolio Alignment: Technical Report \(2021\)-TCFD Knowledge Hub \(tcfdd.org\)](https://www.tcfdd.org/Measuring-Portfolio-Alignment-Technical-Report-2021)

**Mitigation requirements over this century for limiting maximum warming to specific temperature levels can be quantified using a carbon budget that relates cumulative CO₂ emissions to global mean temperature increase. IPCC Sixth Assessment Report, [Chapter 5: Global Carbon and other Biogeochemical Cycles and Feedbacks | Climate Change 2021: The Physical Science Basis \(ipcc.ch\)](https://www.ipcc.ch/report/sixth-assessment-report/)

***Statistical Classification of Economic Activities in the European Community (NACE*) is the industry standard classification system used in the European Union. It uses four hierarchical levels from more high level (1) to more granular (4).

Visual 15: Climate data quality for listed equities and corporate bonds – internal elaboration of data provided by Ortec.

Consistent with our explanation earlier in this report pertaining to MSCI emissions data, listed equities remain the asset class with the best data quality overall. The difference in data quality between the listed equities active and passive mandates seems to be mainly driven by the number of issuer companies within each mandate, reflective of the different benchmarks and strategies.

The difference for our corporate bonds mandates is more pronounced, and this is mainly attributed to the significantly larger universe of private vs. public bond issuers in the UK corporate bonds mandate. Typically, emissions data is sourced from annual reports and accounts, which public bond issuers (firms which have an equity listing on the stock market) are required to disclose, whereas private bond issuers are not.

Binary alignment metric

To retain the ability to compare metrics over time, we decided to continue reporting the binary alignment metric. This metric estimates the share of our holdings aligned with the different temperature thresholds, including those set out in the Paris Agreement, based on whether their existing decarbonisation commitments have been externally verified and if the emission trend is aligned with those commitments. The lack of a standard way to quantify the carbon budget and define the decarbonisation pathways means that the results may vary substantially according to the provider and evolution of individual models over time.

In future disclosures of this metric, we aim to provide details on methodological changes that may drive changes in the reported metric.

Ortec remains our selected partner for calculating alignment metrics as we consider their methodology to be one of the better methodologies. The underlying decarbonisation pathways in their Ortec ClimateALIGN model were developed using the macro-econometric model E3ME from Cambridge Econometrics. Unlike the International Energy Agency's (IEA) scenarios, the Ortec ClimateALIGN model gives both broad and granular sector and geographic coverage and covers most asset classes. In addition to this, the scenarios used for this metric are consistent with our scenario analysis also carried out by Ortec, which helps in consistency when analysing results. More details on their methodology are available in **Appendix 3**.

Given our observations of improved data quality presented earlier in this report, this year we have reported binary alignment metrics for corporate bonds in addition to the listed equities. As such, the charts below present the binary metrics based on the Ortec ClimateALIGN methodology and underlying assumptions for both listed equities and corporate bonds.

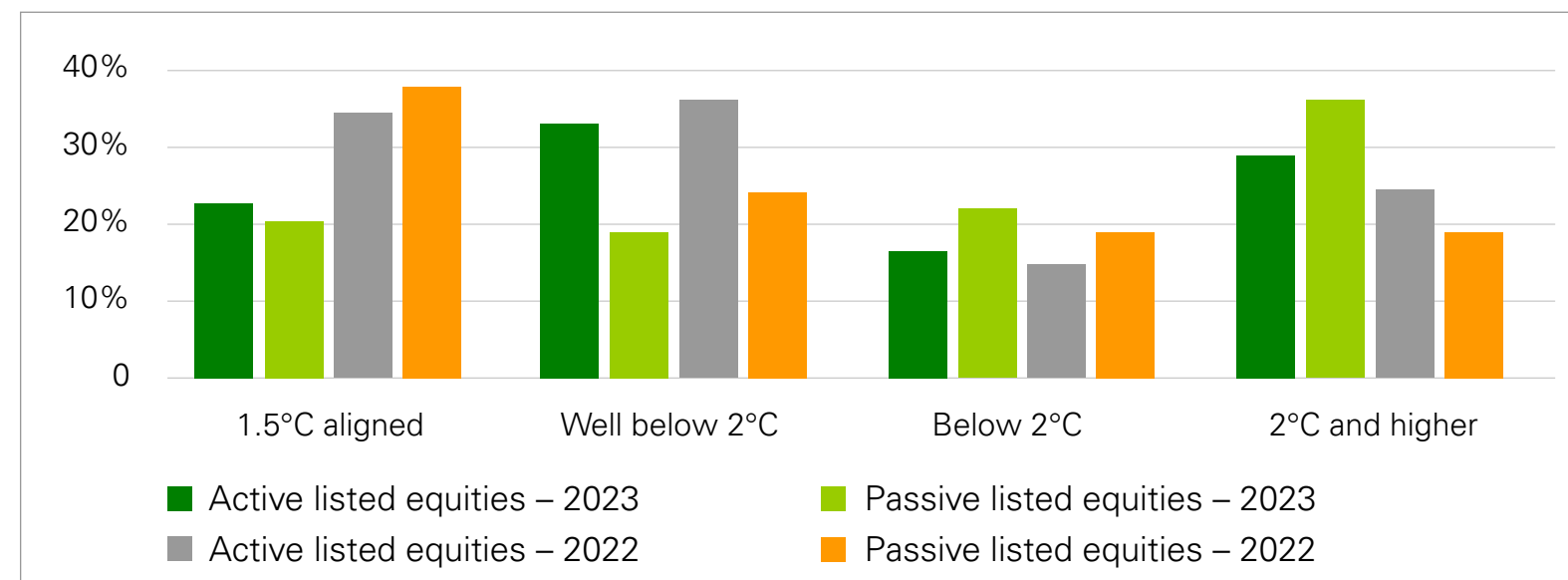


Listed equities alignment metrics

The level of issuers' alignment with the Paris Agreement goals is represented by two of the categories on the horizontal axis: well below 2°C and 1.5°C aligned (where °C denotes degrees of Celsius).

- For active listed equities, the estimates show that 55% of issuers are aligned to the goals of Paris Agreement (23% are 1.5°C aligned, and 32% are well below 2°C aligned).
- For passive listed equities, the estimates show that 40% of issuers are aligned to the goals of Paris Agreement (21% are 1.5°C aligned, and 19% are well below 2°C aligned).

The reduction in the number of companies aligned with the Paris Agreement goals is partly linked to change in portfolio composition (136 new issuers compared to last year) and a worsening of individual ITR scores for many companies (88 saw their individual score increased by 0.2). This is in line with ClimateALIGN's methodology, which not only checks for the existence of an SBTi target but also that the reduction of emissions is in line with the sector and geographical decarbonisation pathways.



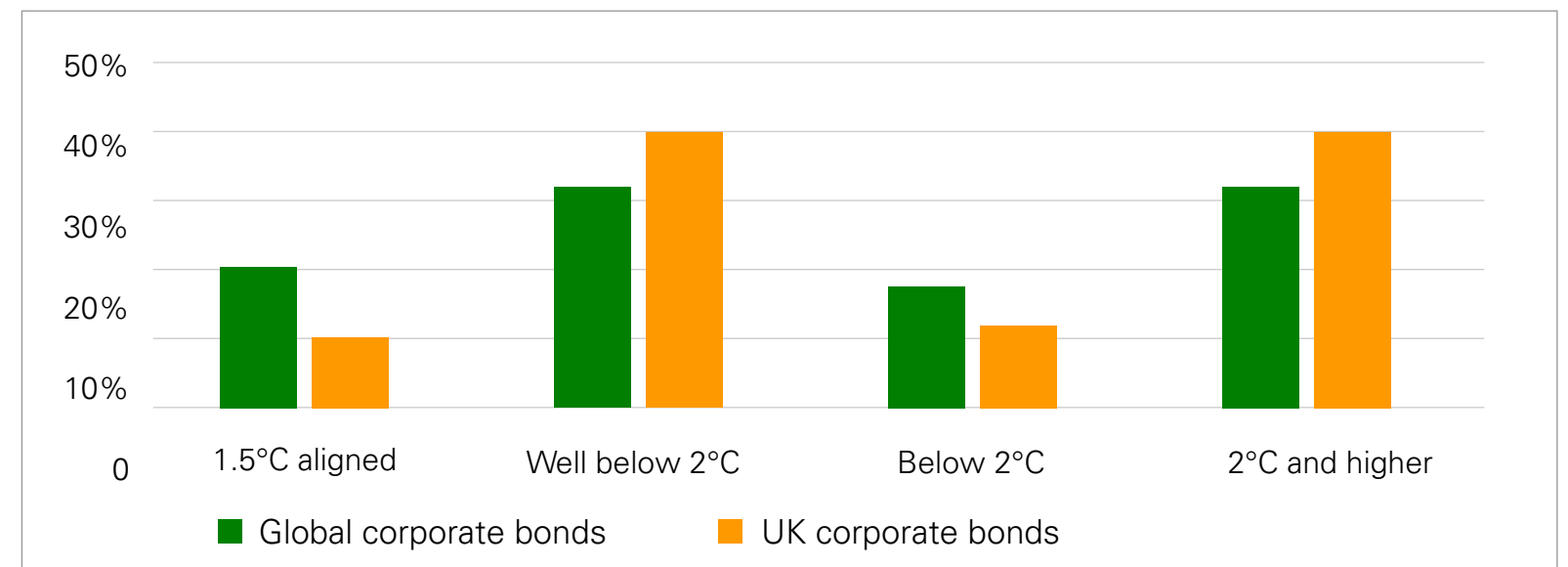
Source: Internal, based on portfolio alignment metrics provided by Ortec.

Visual 16: Binary alignment metrics for listed equities.

Corporate bonds alignment metrics

- For global corporate bonds the estimates show that 52% of issuers are aligned with the goals of Paris Agreement (20% are 1.5°C aligned, and 32% are well below 2°C aligned).
- For sterling corporate bonds the estimates show that 49% of issuers are aligned with the goals of Paris Agreement (10% are 1.5°C aligned, and 39% are well below 2°C aligned).

At present, we are not making any investment decisions on the basis of alignment metrics, given the uncertainties and limitations highlighted above. We have, however, started to use the binary alignment metric and its underlying data to identify companies and issuers which appear to be misaligned with the goals of the Paris Agreement and are requesting our managers to initiate or strengthen relevant engagement strategies with those companies.



Source: Internal, based on portfolio alignment metrics provided by Ortec.

Visual 17: Binary alignment metrics for corporate bonds.

Target

In line with our regulatory obligations, we are required to set a Fund-specific target in relation to at least one of the reported metrics. The aim and ambition of the target is to track our efforts to manage climate change risks and opportunities consistent with our fiduciary duties. We are required to measure our performance and review the target in each scheme year, including consideration of whether it remains fit for purpose.

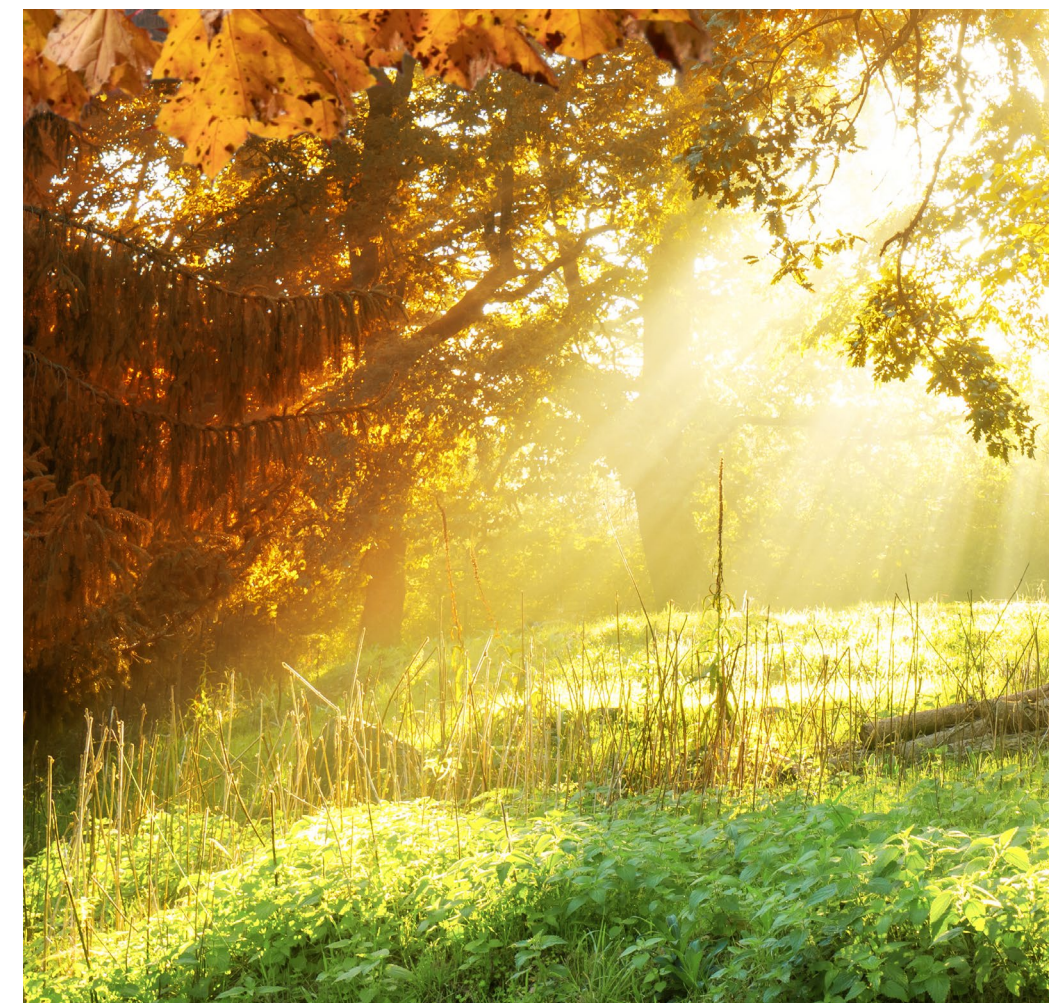
As explained in the **Additional climate change metric section** above, last year, we achieved our target set out in our 2022 climate change report – to carry out the preparatory portfolio alignment analysis for the Fund’s entire investment portfolio. Having delivered on the previous target, we are now required to set, monitor and disclose a new target.

We recognise climate change as a systemic, long-term material financial risk to the value of the Fund’s investments and consider supporting the goals of the Paris Agreement a part of fulfilling our obligations. Our NZA, set in 2022, helped focus our efforts on contributing to real economy decarbonisation, supporting us in effectively managing the Fund’s climate change-related risks and opportunities.

Last year, with support from our investment adviser, we performed an assessment to identify the most appropriate target for the Fund. This included consideration of what we believe is achievable today, based on available information. Based on that assessment, our new target for the Fund is to aim to reduce the identified portfolio-related absolute financed emissions (Scopes 1 and 2) across our publicly listed equities and corporate bonds mandates by at least 50% by 2030. We set this target as an aspiration and will keep this target under review in terms of managing the Fund’s risks and opportunities and complying with our legal duties.

Both the implied level of reduction (50%) and the relevant timeline (2030) are consistent with our NZA. They are rooted in the Paris Agreement goals and recognise scientific consensus (e.g. Intergovernmental Panel on Climate Change (IPCC) special report on global warming of 1.5°C) and recognised industry frameworks (e.g. Institutional Investors Group on Climate Change (IIGCC) Net Zero Investment Framework). The baseline for our target are absolute financed emissions metrics (Scopes 1 and 2) as at 31 December 2021, as set out in our first climate change report.

We recognise the challenges inherent in setting and achieving this new target and we view our target as an ambition, given its dependencies on other market participants, both in the private and public sectors, and future uncertainties as the Fund’s circumstances and external conditions change between now and 2030. However, based on what we know today, and having considered our de-risking investment approach and the natural decarbonisation tendencies our managers identified in the benchmarks they use for our strategy, we believe it can be achieved with limited changes to our investment approach.



We believe that our managers are well positioned to support us towards meeting the new 2030 target, and we are helping them explore optimal ways to do so. Our managers continue to engage with underlying companies on their respective climate transition plans, challenging them when they are deemed insufficient.

We have already observed reductions in financed emissions for our listed equities managers.

A significant portion of that has been driven by the reduction in allocation to listed equities as part of our de-risking strategy, further helped by our managers' consideration of climate change as a driver of financial risk. Our corporate bonds managers have made progress in their own net zero journeys and have themselves committed to the Net Zero Asset Managers' Initiative, which includes the same 50% financed emissions (Scopes 1 and 2) reduction targets by 2030, and 2050 net zero targets, in addition to other engagement-related targets. They report publicly on their progress towards meeting those targets on an annual basis.

The following table presents the levels of reduction in absolute financed emissions (Scopes 1 and 2) from our estimated baseline level of 403,000 tons of CO₂e as at December 2021. We are applying the target at the individual asset class level, but we are also monitoring the level of reduction at the combined asset class level.

2023 Climate Change Report Target	Absolute financed emissions metric (thousands of tons CO ₂ e, Scopes 1 & 2)			
	Asset Class	2021 (baseline)	2023 (current)	% change
Listed equities	147	18	-88%	50%
Corporate bonds	256	178	-30%	50%
Total LE + CB	403	196	-51%	n/a

Visual 18: Estimated levels of change in the absolute financed emissions between 2021 and 2023 versus the 2030 target.

Although the observed level of reduction is already quite significant, the target remains meaningful given we expect our corporate bonds portfolio to increase due to further de-risking. Additionally, as discussed in the **Data quality and availability section** earlier in this report, we remain conscious of limitations in both the availability and the quality of data necessary for accurate calculation of emissions metrics, as well as ongoing methodology improvements to address inefficiencies of the current modelling. Changes in emissions metrics may also be driven by factors beyond emissions alone, for example by market volatility affecting the market values of investee company equity and debt. These factors can lead to fluctuations in the estimated emissions metrics, and therefore may impact the overall percentage change in the total portfolio financed emissions metrics.

We will continue to keep our selected metrics and related target under regular review so that they remain fit for purpose in the overall context of our legal duties and the effective management of the Fund. We retain our ability and powers to set and vary our strategy, associated targets and metrics as we see fit, based on evolving circumstances.

Looking ahead

Events during 2023 will likely continue to have ramifications on the world economy for the foreseeable future. This is driven primarily by changes to the geopolitical landscape and the ensuing impact on supply chains, and can be further amplified this year by a number of political elections covering a large part of the world economy. Nonetheless, as we move forward into the future, the world's need to address the climate change challenge will become even more important.

In 2024, the Fund will continue to play its part in helping to achieve the goals of the Paris Agreement and will seek options to increase the scope of our NZA to a broader set of asset classes. As part of our net zero action plan, during 2024 we will review our

managers' investment approaches to net zero in detail, in order to understand how these may impact our investment strategy and whether changes to the existing mandates will be needed. In addition to this, we will continue to be an active member of the relevant associations and initiatives we have joined, while working with our managers to encourage much-needed improvement in the quality and availability of emissions data.

As a long-term investor, we will continue to put in our best efforts to balance the need to act on climate change-related issues while recognising uncertainties of the current economic environment, inflation, longevity and other crucial factors which may impact the real economy decarbonisation pathway and our funding level.

The ongoing dialogue with our advisers, asset managers, data providers, industry bodies and regulators allows us to keep abreast of relevant best practice, and the content of our reports is reflective of our commitment and actions we take to contribute to real economy decarbonisation, while effectively managing the Fund's climate change-related risks and opportunities.

We look forward to keeping you informed in future reports on the progress we have made towards fulfilling our climate-related ambitions.



Appendix 1

Partnership for Carbon Accounting Financials (PCAF)*

PCAF is a global partnership of financial institutions that work together to develop and implement a harmonised approach to assess and disclose the GHG emissions associated with their loans and investments.

GHG Protocol establishes comprehensive global standardised frameworks to measure and manage GHG emissions from private and public sector operations, value chains and mitigation actions.

The Protocol set forth three different classifications of GHG emissions:

- **Scope 1:** cover emissions from sources owned or controlled by a company/organisation – for example, emissions caused by direct combustion of fuel by the company in a manufacturing process.
- **Scope 2:** emissions caused by the generation of the energy, principally electricity, that a company uses. For example, emissions associated with the electricity used in cooling processes.

- **Scope 3:** all indirect emissions that occur in the value chain of the reporting company/entity, including both upstream (providers of goods and services) and downstream (users of the company's products and services).

The Global GHG Accounting and Reporting Standard, developed by the PCAF Global Core Team, is comprised of three parts: A, B and C.

Part A – Financed Emissions provides detailed methodological guidance to measure and disclose emissions associated with seven asset classes as well as guidance on emission removals: listed equities and corporate bonds, business loans and unlisted equity, project finance, commercial real estate, mortgages, motor vehicle loans and sovereign debt.

Part B – Facilitated Emissions provides methodological guidance for measuring and reporting the emissions associated with the capital markets transactions; and

Part C – Insurance-Associated Emissions provides methodological guidance for measuring and reporting the emissions associated to re/insurance underwriting.

The first edition of the Financed Emissions Standard has been reviewed by the GHG Protocol and is in conformance with the requirements set forth in the Corporate Value Chain (Scope 3) Accounting and Reporting Standard, for Category 15 investment activities.

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

PCAF data quality

As a leading initiative on carbon accounting for investors, PCAF defines a data quality indicator, ranging from 1 for highest to 5 for lowest data quality. Please see below for an explanation of what each score means.

PCAF score	Data required
1	Reported emissions, based on the Greenhouse Gas Protocol, that have been verified by a third-party auditor.
2	Unverified reported emissions or estimates based on the company's energy consumption, in line with the Greenhouse Gas Protocol.
3	Estimated emissions based on the company's production data. For example, tonnes of steel produced.
4	Estimated emissions based on economic data – such as revenue, company value and the amount lent/invested.
5	Estimated emissions based on economic data – such as sectoral revenues and asset turnover ratios.

Verified and unverified emissions are not distinguished in MSCI's database at this point, so quality scores 1 (third party-verified emissions data) and 2 are combined under quality score 2. This is not unlike other data providers and reflects the current state-of-play for emissions verification. This is expected to improve over time, especially as standards improve due to the introduction of the International Sustainability Standards Board's standards.



Appendix 2

Ortec Finance ClimateMAPS

The Ortec Finance Climate Scenarios (ClimateMAPS) are underpinned by their internal climate scenario narratives. Qualitative narratives describe key scenario drivers and assumptions, thereby adding deeper economic, technical, environmental and social dimensions. As of the 2023 update, Ortec's climate scenarios provide four standard climate scenario narratives: Net Zero, Net Zero Financial Crisis, Limited Action and High Warming.

Net-Zero	Net-Zero Financial Crisis	Limited Action	High Warming
<p>Why?</p> <p>Tests exposure to the risks/opportunities from the systemic drivers of an orderly transition and locked-in physical risk.</p>	<p>Why?</p> <p>Shows the resilience of portfolios to sudden repricing, triggering market dislocation centred on high-emitting stocks.</p>	<p>Why?</p> <p>Highlights how scaled-down transition policy leads to larger physical risk and material transition risks for portfolios.</p>	<p>Why?</p> <p>The main focus of this scenario is physical risk, results show the exposure to plausible, severe climate change impacts.</p>
<p>What?</p> <ul style="list-style-type: none"> • Early and smooth policy transition • Locked-in physical impacts • Financial markets pricing-in dynamics occur smoothed out in the first 4 years 	<p>What?</p> <ul style="list-style-type: none"> • Early and smooth policy transition • Locked-in physical impacts • Sudden divestments in 2025 to align portfolios to the Paris Agreement goals have disruptive effects on financial markets with sudden repricing followed by stranded assets and a sentiment shock 	<p>What?</p> <ul style="list-style-type: none"> • Policymakers implemented limited NDCs and fall short of meeting the Paris Agreement goals • High gradual physical and extreme weather impacts • Financial markets price-in physical risks smoothly with the coming 40 years 	<p>What?</p> <ul style="list-style-type: none"> • The world fails to meet the Paris Agreement goals and global warming reaches 4.2°C above pre-industrial levels by 2100 • Very severe gradual physical and extreme weather impacts • Financial markets price-in physical risks smoothly with the coming 40 years
<p>🌡️↑1.5°C</p>	<p>🌡️↑1.5°C</p>	<p>🌡️↑2.8°C</p>	<p>🌡️↑4.2°C</p>

In addition to introducing new scenario (Limited Action), Ortec also updated some other elements of the underlying model:

- Acute physical risk modelling:
 - New model introduces extreme weather events for small cities and other effects (levels term).
 - The climate module formulation is now exponential, in line with climate science.
 - Model now statistically sampled to better capture climate uncertainty.
 - Expanded the granularity leading to greater impact from physical risks.
 - The inflation modelling to account for the secondary impacts of changes in food prices on other sectors has been improved. This includes considering impacts on consumer demand and prices of other goods and services, as well as feedback effects on wages, investments and trade.
- The emerging market debt modelling has been enhanced to incorporate higher physical risks, especially in developing countries closer to the equator. This is reflected in higher spreads and an increased probability of default.

In their ClimateMAPS framework, Ortec leverages the Cambridge Econometrics' E3ME model (E3ME model), which is a computer-based, non-equilibrium model of the global economy, energy systems and the environment.

Ortec uses the E3ME model to capture the effects of the low-carbon transition on the real economy. A wide range of policies necessary to reach global net zero CO₂ emissions are modelled at a country level, which leads to changes in energy demand and technology uptake. The E3ME model takes into account worldwide macro-economic interactions and industry supply chain inter-dependencies. The key outputs from the model include country-level impacts on inflation, GDP and GVA per sector.

The climate-adjusted GDP, GVA and inflation shocks from transition, chronic physical risks and acute physical risks are fed into the Ortec Finance Stochastic Financial Model (OFS) as eight-year shocks. The climate shocks are translated to a wide range of (600+) financial and economic variables. In addition, pricing-in of future expected climate risks is modelled in annual time steps, as well as a sentiment shock in the Net-Zero Financial Crisis Scenario.

The economic impact of climate-related acute weather events is modelled in the proprietary acute physical risk model ClimatePREDICT. The outputs are differences in annual GDP growth rates per country compared to a world with no further warming than the current 1.2°C relative to pre-industrial levels.

Limitations

Any modelling framework is a simplification of reality, and Ortec's approach is no exception. Key limitations are summarised below.

Transition risk

- Only one possible pathway to each temperature outcome is modelled.
- Behavioural shifts, such as changes in lifestyle or economic systems are not currently included in our scenarios.
- The econometric approach means that historical interactions between economic and financial variables in the model are assumed to hold in the future.

Physical risk

- Chronic physical risks are modelled by a damage function proxy from literature.
- Economic and financial impacts of climate tipping points, climate-related health impacts, biodiversity loss, geopolitical conflict and migration are not fully captured.

Appendix 3

Ortec Finance ClimateALIGN

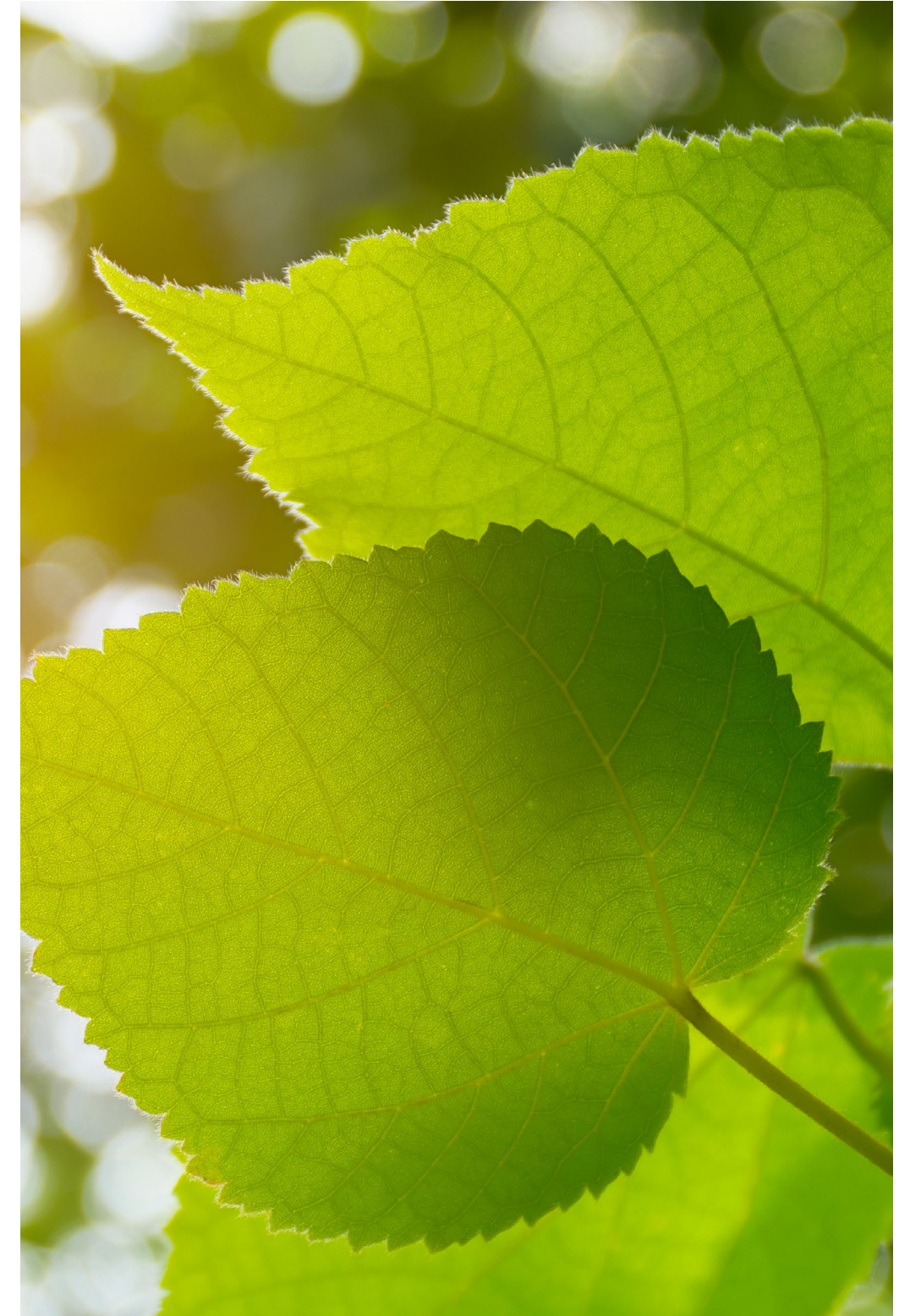
Ortec Finance portfolio alignment methodology (ClimateALIGN) was developed using open-source networks (OS-Climate*). It uses one consistent net zero scenario across all alignment and risk-return analytics. ClimateALIGN generates Implied Temperature Rise (ITR) score as a forward-looking portfolio net zero alignment metric, which can be generated at portfolio, asset class, sector, country/region and security levels. Based on the ITR scores, Ortec also provides a TPI-style categorisation based on the following classification which allows us to maintain the Binary Alignment Measurement metric approach that we prefer, with the increased coverage that we need.

- Net-Zero Aligned ($\leq 1.5^{\circ}\text{C}$ increase scenario)
- Well below 2°C ($> 1.5^{\circ}\text{C}$ and $\leq 1.7^{\circ}\text{C}$ increase scenario)
- Below 2°C ($> 1.7^{\circ}\text{C}$ and $\leq 2^{\circ}\text{C}$ increase scenario)
- Above 2°C scenario; and
- Not covered.

In line with TCFD recommendations, it uses a hybrid approach that both takes into account historical emissions data and emissions reduction targets for the most holistic view of the company's alignment. As one of the inputs, Ortec uses the SBTi's metric, complementing it with historic emissions data trends. When company-specific emissions data isn't available, ITRs are estimated based on companies in the same sector-region. We provide a brief overview of SBTi methodology further below.

At a high level, ClimateALIGN methodology follows five steps:

1. Allocate a company carbon budget based on net zero decarbonisation assumptions.
2. Project company emissions forward.
3. Compare company and sector-specific budget with projected company emissions to calculate overshoot/undershoot (%).
4. Converts emissions overshoot to implied temperature rise (ITR) in Celsius degrees using a multiplier which represents the ratio of the globally averaged surface temperature change per unit carbon dioxide (CO_2) emitted.
5. Aggregate company scores to a portfolio level.



*OS-Climate has 18+ members including Goldman Sachs, Allianz, BNP Paribas, EY, RedHat- a subsidiary of IBM, Net-Zero Asset Owner Alliance, AWS and Microsoft.

The decarbonisation pathways used in ClimateALIGN are based on the outputs of the Cambridge Econometrics E3ME model. The E3ME scenarios provide decarbonisation benchmarks for all relevant sectors, which enables to use the convergence-based approach suggested by the Portfolio Alignment Team (PAT) in its TCFD considerations.

Uncertainties around the decarbonisation pathways are not modelled explicitly at the moment, which is a feature shared with other alignment models in the market today. One key advantage is that ClimateALIGN shares the decarbonisation pathways used in ClimateMAPS which we use for our scenario analysis.

Under ClimateMAPS, uncertainty around the decarbonisation pathways is addressed by exploring a range of different scenarios and sensitivity analyses. Explicit modelling of decarbonisation pathway uncertainty is part of the product development roadmap.

To calculate the cumulative benchmark emissions for the company to be aligned to, and provide a convergence benchmark, ClimateALIGN applies a sectoral decarbonisation approach (SDA) based on the sector, which is also used by the SBTi but using a different set of scenarios. Both the initial

company-specific, emission-intensity ratio and the projected trend in emission intensity ratios affects the calculated ITR. This way, the ITR methodology allows for the progress a company is making (up to the present day) in decoupling economic value and emissions, and for the magnitude of decarbonisation the company needs to make to meet the net zero benchmark. This results in underperforming companies needing to reduce faster than average to be aligned (as the difference between the current emission intensity and the 2050 benchmark emission intensity), while high-performing companies can be aligned with a lower rate of reduction.

In the net zero pathway, Ortec models EU-style emissions trading scheme covering all world regions and most sectors (excluding passenger transport and households). The model uses many types of carbon policies in addition to the carbon price as a lever for the transition. Passenger transport and households sectors are assumed to have their own fuel tax, which is equivalent to carbon pricing in other sectors. The model also assumes steeply growing carbon prices for all regions, covering all fuel users. In the net zero pathway, carbon prices grow steeply for all regions covering all fuel users, yet the modelled carbon price differs by region.

Science Based Targets initiative (SBTi)*

The Science Based Targets initiative (SBTi) defines and promotes best practice in emissions reductions and net zero targets in line with climate science, offers technical assistance and resources to companies who set science-based targets in line with the latest climate science, and provides companies with independent assessment and validation of targets. SBTi's validation process looks at both qualitative and quantitative metrics (which include factors such as organisational boundaries, targets' scope coverage and timeframe).



*<https://sciencebasedtargets.org/>

Appendix 4

Glossary

We have tried to limit the use of technical terms as much as possible in this climate change report, produced by the BP Pension Fund, providing explanations where appropriate. However, here is a list of some of the terms you might need to know.

Board – Board of directors of the Trustee

BP Investment Management Limited (BPIM) – our internal asset manager

Emerging Market – list of markets associated countries that has some characteristics of a developed market, but does not fully meet the standards

ESG – environment, social and governance

Fund – BP Pension Fund

GBP – British pound sterling

GDP – gross domestic product

GHG – greenhouse gas emissions

Gt CO₂ – gigatons of CO₂; one gigaton is equal to 1,000,000,000 (1 billion) metric tons, each metric ton is equal to 1,000 kilograms (kg)

GVA – gross value added

Investment Committee – a committee delegated by the Board to focus on investment matters

LDI – liability driven investments

NZA – the Fund’s Net Zero Ambition

Paris Agreement – the international treaty on climate change, adopted in 2015 during the 21st Conference of Parties (COP 21)

PRI – UN-linked Principles for Responsible Investment

RI policy – our responsible investment policy adopted by the Board

Sponsor or bp – BP p.l.c.

TCFD – Task Force on Climate-related Financial Disclosures

Trustee – BP Pension Trustees Limited, corporate trustee of the BP Pension Fund

United Nations Framework Convention on Climate Change (UNFCCC) – international environmental treaty to combat human interference with the climate system

Important information

The information contained in this report may cover general activity on stewardship, investments, voting, responsible investment, climate, ESG, including opinions, prospects, results, forward-looking statements. Use of forward-looking terminology using words such as 'may,' 'believe,' 'aim,' 'will,' 'should,' 'expect,' 'anticipate,' 'seek,' 'intend,' or the negatives thereof or other variations (together, 'forward-looking statements') are not a reliable indicator of performance of the Fund. There can be no assurance that any of the matters set out in these forward-looking statements are attainable, will actually occur or will be realised or are complete or accurate.

The Trustee has prepared this report for the Fund based on internally developed data, publicly available information, and third-party resources with whom it has contractual relationships. Although we believe the information obtained from third-party sources to be reliable, it may not be independently verified, and we cannot guarantee its accuracy or completeness.

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