

G4S Pension Scheme

TCFD Report



cardano

Contents

1. Introduction	4
1.1. Trustee commentary	4
2. Governance.....	5
2.1. Introduction	5
2.2. Trustee Oversight	5
2.2.1. Defined Contribution oversight	5
2.2.2. Defined Benefit oversight	6
2.3. Trustee Knowledge and Understanding	6
2.4. Oversight of Investment Adviser and third-party providers.....	7
3. Strategy.....	8
3.1. The short-, medium- and long-term time periods identified for our Scheme.....	8
3.2. The climate change-related risks and opportunities that will affect our Scheme’s investment strategy over the short-, medium- and long-term.....	8
3.3. The impact of the risks and opportunities on the Scheme’s investment strategy	10
3.4. Scenarios	10
3.4.1. Details of the most recent scenarios we have selected	10
3.4.2. The reasons for choosing the scenarios we have used	10
3.4.3. The resilience of our investment strategy in these scenarios (in other words, the results)	10
3.4.4. The key assumptions for the scenarios we have used and any limitations of the modelling ...	11
3.5. Engagement.....	12
3.5.1. Engagement with companies and governments	12
3.5.2. Asset manager engagement	12
4. Risk Management	13
4.1. How we identify and assess climate change-related risks and opportunities	13

4.2.	How we integrate these processes into overall risk management for the Scheme.....	13
4.3.	The risk management tools we – and our investment adviser – have used and the outcomes of using those tools.....	13
4.4.	Understanding covenant risks	15
4.4.1.	Scenarios analysis	15
4.4.2.	Covenant analysis conclusions	16
4.5.	Understanding funding risks	16
4.5.1.	Interpreting the mortality impact	17
5.	Metrics and Targets	18
5.1.	Who is our data provider?.....	18
5.2.	What are the limitations?	18
5.3.	Metrics	19
5.3.1.	The metrics we have calculated	19
5.4.	Targets.....	21
5.4.1.	The target we have set in relation to the metrics we have calculated, and as far as you are able, your scheme’s performance against that target	21
5.4.2.	The steps we are taking to achieve our target.....	21
5.4.3.	The method we used to measure performance against our target.....	22
6.	Appendix – Climate Scenario Analysis.....	24

1. Introduction

1.1. Trustee commentary

We recognise the need for urgent, collective action on climate change

Welcome to our second Task Force on Climate-Related Financial Disclosures (TCFD) report.

The climate crisis has profound implications for UK savers. Left unchecked, runaway climate change will lead to substantial financial, environmental and social consequences. This is clearly not in our members' best long-term interests.

Integrating sustainability matters makes sense for our members

We think there are good investment reasons to focus on sustainability, and climate change in particular. By not considering major sustainability matters, including environmental, social and governance issues, we would be giving an incomplete perspective of the risks to the investments.

Our commitment

We have committed to aligning our investments to the progression towards net-zero greenhouse gas emissions in the global economy by 2050 at the latest. Net Zero means not adding to the amount of greenhouse gases in the atmosphere.

By 2030, we have targeted investments to an aggregate 50% reduction in emissions.

This is consistent with the Paris Climate Agreement's objective of limiting warming to 1.5 degrees, what science tells us is the limit of warming that our planet can safely absorb.

In 2024 within the DB Scheme, our Scope 1 and 2 greenhouse emissions per £1m invested was 57.5 tonnes of carbon dioxide equivalent. For every million pounds of investment, this is the equivalent of around 4 million smartphone charges¹.

As at 31 March 2024, the Scheme is tracking below the Net Zero Target Pathway i.e. the actual emissions are less than our Net Zero Decarbonisation target. Therefore, with the release of the latest emissions data on a standalone basis, the Trustee believes there is no reason to change the investment strategy. The Scheme's emissions have trended downwards from its 2019 baseline year, and this is a result of the de-risking within the Investment Portfolio over this time.

We also review scenario analysis due to the complexities involved in forecasting the degree of warming that will result from climate change; including policy uncertainty, multiple environmental tipping points, and potential technology advances. We have chosen to disclose three scenarios that highlight the impact of physical risks and transition risks in different scenarios. Our three scenarios are:

Scenario	Description	Results (qualitative impact assessment on total assets)
Paris-aligned transition	This is our goal: assumes measures are taken that will keep the rise in temperature limited to 1.5°C	Positive
Late transition	This is a forecast of what we think is most likely to happen: assumes measures are introduced to tackle climate change, but are introduced too late to meet the Paris Agreement	Moderate

¹ Source: United States Environmental Protection Agency

Slow transition	This is our hot-house scenario: assumes current policies being continued. According to the UN, we are currently on track for 3.0°C warming	Negative
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2. Governance

2.1. Introduction

As the Trustee of the Scheme, we consider climate change to be a significant risk, which is reflected in how we interpret our duties and responsibilities. The Trustee believes that Climate Change related Risk and Opportunities (CCRO) are, and will continue to be, a financially material factor and as such is incorporated in our investment decision making. The Trustee further believes that, to the extent our decisions, including investment related decisions, have an impact on climate change, it is appropriate for us to aim to minimise the harm done by our decisions to the extent this can be done without compromising our financial responsibilities.

To fulfil our duties to the Scheme regarding CCRO, we have prepared this CCRO Policy and also put in place a governance framework that provides structure for making climate-related decisions and to ensure that we integrate climate risks and opportunities in our decisions on behalf of our members, which include investment related decisions. It shows where responsibility lies for decision making and sets out how this work is integrated into our longer-term plans, monitoring framework and meeting cycle.

This framework has been prepared in line with the latest regulation and guidance. This includes the Pension Schemes Act 2021 and the Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021 (the Regulations), statutory guidance for climate governance and reporting of CCRO issued by the Department for Work & Pensions (DWP), the guidance prepared by The Pensions Regulator (tPR), the non-statutory guidance prepared by the Pensions Climate Risk Industry Group (PCRIG), as well as recommendations set out in the Taskforce for Climate-Related Financial Disclosures.

The framework comprises three main elements:

1. Trustee Oversight
2. Trustee Knowledge and Understanding
3. Third-Party Providers

2.2. Trustee Oversight

The Trustee is ultimately responsible for the oversight of CCRO as they relate to the Scheme.

This report covers the Scheme's three sections; the Securicor Section, the Group 4 Section and the GSL Section, and the Defined Contribution Account.

2.2.1. Defined Contribution oversight

The Scheme's Defined Contribution ("DC") Section is valued at c.£8 million and represents less than 1% of the total Scheme assets. Furthermore, the DC Section does not use the same investment funds that the DB Section uses. The statutory guidance for trustees stresses the importance of taking a proportionate approach to climate-related risks, opportunities and reporting, recognising that data may be expensive to collect and associated analysis complex to perform. As such, the DC Section's assets have not been included within this report as they represent a disproportionately small part of the Scheme. The Scheme's TCFD sub-committee has received TCFD reports for the funds held in the DC Section's default investment strategy.

2.2.2. Defined Benefit oversight

Climate change is a financially material risk that we consider in our decision making.

The Trustee sets its processes within the governance framework concerning climate change, including:

- Agreeing the types of climate-related risks and opportunities which they consider will have an effect over the short, medium and long terms on the Scheme's investment and funding strategies
- Agreeing the time periods which comprise the short, medium and long term applicable to the Scheme, taking into account the Scheme's liabilities and its obligations to pay benefits as appropriate
- Agreeing appropriate climate-related targets for the Scheme
- Agreeing the climate-related metrics that are used to measure progress towards the climate-related targets, which will include at least one absolute emissions metric, one emissions intensity metric, one alignment metric, and one additional climate change metric
- Agreeing the Scheme's approach to scenario analysis, including the scenarios to model (which will include at least two scenarios where there is an increase in the global temperature and in at least one of those two scenarios the global average temperature increase selected will be within the range of 1.5 and 2 degrees Celsius above pre-industrial levels)

The Trustee will review the policy (including the metrics, targets, scenario analysis etc.) annually.

The Trustee delegates responsibility for implementing the DB investment strategy to a fiduciary manager. The Fiduciary Manager aligns its investment decisions with the Trustee's climate change policy. It has set up a TCFD subgroup within the Trustee ("The Working Group") to help streamline discussions between the Trustee and its advisers.

The Trustee will maintain oversight through its quarterly reporting and meeting cycle where CCRO matters are considered. CCRO information and reporting includes updated information on Targets, progress against those Targets and climate change scenarios, and assessments of the impact of the climate-related risks and opportunities on the Scheme's investment and funding strategy.

- The Trustee meets with its investment advisers quarterly and receives advice and monitoring reports
- The Working Group, in conjunction with the Fiduciary Manager, will be developing a more detailed analysis of the effect that climate-related risks and opportunities will have on the Scheme's investment and funding strategy.
- The Working Group will report back to the Trustee

2.3. Trustee Knowledge and Understanding

While we are not directly involved in the day-to-day investment decision process, we as the Trustee, are ultimately responsible for ensuring that CCRO are identified, assessed and managed on behalf of the Scheme and its members. We are therefore required to have sufficient knowledge and understanding of the types of climate-related risks and opportunities which may have an effect on the Scheme and in order to set metrics and targets for our service providers and interpret the results of any analysis and reporting provided to us. We need to ensure that we are sufficiently informed so that we are able to challenge assumptions, external advice and information received and to fully understand any proposals developed by our advisers.

The Trustee maintains its Knowledge and Understanding with respect to climate change by:

- Identifying regulatory developments that are relevant to the Scheme, including guidance provided by the Pensions Regulator and the Department for Work and Pensions
- Engaging with peer groups, industry bodies and advisers to compare the Scheme's position to peers

- Attending specific sessions on climate change and TCFD requirements run by our Fiduciary Manager. For example, The Working Group have engaged in specific training sessions run by the Fiduciary Manager on the requirements of TCFD reporting.

2.4. Oversight of Investment Adviser and third-party providers

We do not carry out underlying investment activities ourselves but rely on our Fiduciary Manager and third-party asset managers (including any third-party managers for the Defined Contribution Scheme) to identify and assess climate change risks and opportunities. In respect of the DB section, we will also consider input from other third-party providers, specifically the Scheme's Actuary and Covenant Advisers.

Aon, as the Scheme Actuary:

- Advises on the funding position including an understanding of the potential funding impact resulting from changes to financial or demographic assumptions driven by climate change;
- Advises on funding strategy robustness to climate risk. Provides input to enable strategic decisions to be made considering impact of climate risks on funding strategy; and
- Provides input into scenario analysis and advises on funding implications.

The Scheme's covenant adviser, Cardano Advisory, advises the Trustee in relation to the Scheme sponsor's ability to continue to support the Scheme. The employer covenant is the extent of the employer's legal obligation and financial ability to support the Scheme now and in the future.

Climate-related exposures could have a positive or negative impact on the strength of the Scheme sponsor's covenant. Therefore, Cardano has begun to include climate-related matters in the covenant advice provided to the Trustee.

Cardano Advisory will work in conjunction with the Trustee and the Scheme's other advisers to assist the Trustee in producing the Scheme's TCFD report on an annual basis, in line with TCFD requirements.

When selecting third-party providers, we require each provider to demonstrate sufficient credentials in relation to the assessment of climate-related matters. This is done by assessing the providers in terms of their:

- Level of understanding on climate change and climate risks and opportunities
- Commitment to decarbonisation targets, including the Paris Climate Agreement of global warming to +1.5°C
- Corporate policies focusing on reaching stated decarbonisation targets
- Resources in place to deliver to climate related objectives
- Ability to report to us
- Associations with and involvement in relevant industry bodies

The Trustee reviews its third-party providers on a regular basis to ensure all stated processes for those managing / advising the Scheme on climate governance remain appropriate.

In relation to our Fiduciary Manager, the Trustee sets objectives informed by the competency framework proposed by the Investment Consultants Sustainability Working Group. These competencies may be assessed as part of our annual assessment of our Fiduciary Manager.

Our Fiduciary Manager assesses our third-party fund managers' climate change competency. This forms part of the Fiduciary Manager's advice making. For the avoidance of doubt, any CCRO applying that are not associated with an aspect or aspects of integrated risk management, will be picked up by the Working Group that have the oversight of the relevant risk and appropriately reflected in the risk management framework. Overall responsibility for climate related risk would remain with the Trustee and the Working Group should report any work carried out in this area back to the Trustee.

3. Strategy

3.1. The short-, medium- and long-term time periods identified for our Scheme

Consistent with guidance from the Pensions Regulator and the position of our DB Scheme, we, the Scheme Trustee, consider:

- Short-term to be 3 years
- Medium-term to be 5 years
- Long-term to be 11 years

The rationale for each of the time periods is as below:

- The short-term refers to the period over which we focus on those risks that have been delegated to the external investment pools and managers; these mandates are typically judged over time horizons of up to five years. This is also the period for which the current investment strategy is expected to remain in force.
- The medium-term refers to the period over which we focus on those risks that currently fall outside the scope of the external investment management mandates but which are not considered to be long-term in nature, for example risks relating to broad market conditions or to identifiable anomalies or trends in the investing environment that fall across multiple asset classes.
- The long-term refers to the period over which the majority of the benefit payments are expected to be made by the Scheme with respect to the current membership. Whilst the Scheme could exist for longer than the 11 years, it is understood that by that stage the Scheme will be mostly invested in government and corporate bonds or potentially insurance contracts where the Trustee will have less influence.

3.2. The climate change-related risks and opportunities that will affect our Scheme's investment strategy over the short-, medium- and long-term

We consider:

- Transition-related risks & opportunities, i.e., policy, legal, reputational and technology, including environmental opportunities;
- Physical risks & opportunities
- Systemic risks & opportunities i.e., economic implications

The transition-related risks relate to the need to transition a business to be consistent with the decarbonisation pathways set out in the Paris Climate Agreement.

The physical risks relate to the increase in weather events that result from a warming, and unpredictable climate, such as rising sea levels, droughts, floods, and wild-fires.

The systemic risks relate to the economic impact of extreme weather events, political activity and policy progress. There will be social and economic impact across our portfolio, which needs to be managed across the short-, medium- and long-term.

Physical risks over the medium-term (up to 10 years) are relatively similar regardless of the scenario we look at because in all scenarios the climate will continue to warm to at least 1.5 degrees over this period. Nonetheless we expect increasing impacts of climate change such as extreme weather over this period under all scenarios. In the longer term the physical risks will start to diverge substantially in warmer versus cooler scenarios. We expect that the discounting of these physical risks will start to be priced into markets

more quickly in the medium term i.e. we will not need to wait for the very long term for physical risks to start to be reflected in asset prices.

The table below summarises the climate change-related risks likely to materialise reported by The Bank of England's Prudential Regulation Authority²:

Climate-related risk		Short/Medium/Long Term	Main causes of financial impact on members
Physical	Acute	Medium/Long	Increased frequency and/or severity of extreme weather events
	Chronic	Medium/Long	Steady increase in global sea levels and changes in precipitation patterns
		Medium/Long	Rising temperatures
Transitional	Policy and legal changes	Short/Medium	Regulations of existing products and services
		Medium/Long	Sectors facing penalty incentives could harm current business models
	Market demand	Short/Medium	Changing consumer behaviour
	Technology	Medium	Existing products replaced with lower emission technology
	Reputational	Short/Medium	Increased scrutiny following changes in stakeholder's perceptions of climate-related action or inaction
Liability	Direct	Medium	Those seeking compensation for financial losses as a result of physical and transitional risks
	Third-party	Medium/Long	Those seeking compensation for damages of physical risk

² <https://www.bankofengland.co.uk/climate-change>

3.3. The impact of the risks and opportunities on the Scheme's investment strategy

We consider climate change-related risks and opportunities in relation to the Scheme's investment strategy, including the asset allocations and asset management structure. Climate change-related risks and opportunities could, for example, affect:

- The dividend paying capability and the share prices, of companies in which we are an owner (either directly or indirectly);
- The prospects and prices of portfolios that we invest in via derivatives;
- The creditworthiness of the issuers of the fixed income assets in which we invest;
- The prospects for banks and other financial institutions that we place cash with;
- Systemically, impacting multiple parts of the portfolio at the same time, and in the same direction.

We consider climate change-related risks and opportunities in a number of ways:

- Our investment policy, and how climate change may affect the different asset classes we are invested in over time;
- Asset class selection and their susceptibility to climate risk;
- Allocation within an asset class;
- Selection of instruments.

3.4. Scenarios

3.4.1. Details of the most recent scenarios we have selected

Our three scenarios are 1.5°C Paris-aligned transition, 2°C “late transition” and 3°C “slow transition” or “hot house”.

- Paris-aligned transition – this is our goal: AIM/CGE³ 1.5°C assumes measures are taken that will keep the rise in temperature limited to 1.5°C;
- Late transition – following a review in conjunction with our Investment Adviser, Cardano, this is a forecast of what we think is most likely to happen: Late AIM/CGE 2 degrees assumes measures are introduced to tackle climate change, but are introduced too late to meet the Paris Agreement;
- Slow transition – this is our hot-house scenario: AIM/CGE 3°C assumes current policies being continued. According to the UN, we are currently on track for 3°C warming.

3.4.2. The reasons for choosing the scenarios we have used

Each scenario consists of a degree of warming and an assessment of its impact on the portfolio. In other words, what do we expect the financial risk to be, and across which asset classes / investments, based on a certain degree of warming?

We have chosen to disclose three scenarios, because we believe this provides us with sufficient scope to inform our investment decisions. They are scenarios that highlight the impact of physical risks, systemic risks and transition risks in different scenarios and so enable us to draw conclusions about the different components of climate change-related risks and opportunities.

3.4.3. The resilience of our investment strategy in these scenarios (in other words, the results)

For the following analysis, we have considered the period to 2030 consistent with our medium-term time

³ The AIM/CGE model is a multi-regional, multi-sectoral, computable general equilibrium (CGE) model.

horizon for the Scheme. We are realistic about the challenges with scenario analysis; it is too complex an impact to model far into the future with high confidence and too long a time horizon to be decision useful for the Trustee. Nonetheless, it is important that we try to reflect the types of risks and opportunities that our strategy may face over the medium-term that may not materialise over shorter-term time horizons. We believe 2030 is an appropriate timeframe as it is enough time for different policy and economic outcomes to develop and affect markets and to be decision useful for the Trustee.

We have chosen not to provide a *quantitative assessment* of scenario risks, as we believe that the commercially available scenario metrics are inadequate in the way they quantify climate change risks. Instead, we have chosen to provide a *qualitative assessment* of various risks and ultimately portfolio outcomes based on narrative scenarios across the three scenarios for climate outcomes. These scenario narratives and portfolio impacts are set out in detail in the Appendix. Our analysis incorporates physical and transitional risks but also separates out systemic risk (impacts on the whole economy) which is often missing from current climate scenario modelling.

As a summary, the impact is set out in the table below:

	1.5 degrees	2 degrees	3 degrees
Transition Risk	High	Moderate	Initially low but increasingly uncertain
Physical Risk	Moderate	Moderate	High
Systematic Risk	Moderate	Moderate	High
Portfolio Impact	Positive	Moderate	Negative

Definition of risk types:

Physical Risks: The impacts of climate change on physical assets owned by a company or in its supply chain, from climate change. For example, the damage to a factory due to coastal flooding and storm damage

Transition Risks: The impacts of climate change on the individual assets due to changing climate policies, legal risks, market and reputational risks faced by companies, particularly as reflected in the increase of either direct or indirect costs of greenhouse gas emissions of the company or its supply chain

Systemic Risks: The macro effects of the consumer and government policy responses to climate change which affect overall economic growth, inflation and broad market outcomes.

Portfolio Impacts: The combined effect of the scenario on both assets and liabilities.

Further detail of the scenarios can be found in the Appendix.

3.4.4. The key assumptions for the scenarios we have used and any limitations of the modelling

We used a qualitative scenario assessment compared to quantitative analysis due to the complexities and inaccuracies involved in forecasting the degree of warming that will result from climate change, including:

- Uncertainties surrounding regional projections of climate change
- Uncertainties around the government policies which will drive transition risks including legislation and regulation, monetary policy and fiscal policy
- Uncertainty around consumer reaction to climate change and how preferences may change over time

- Uncertainties around the economic impacts on future growth and inflation of both the climate change factors and the government policies.
- Uncertainties around the market reactions to changes in policy, consumer behaviours, growth and inflation prospects

Key assumptions are explained in the narratives explaining the scenarios in the Appendix and focus on overall growth asset performance and the effects of interest rate and inflation on liability values.

3.5. Engagement

3.5.1. Engagement with companies and governments

Our goal is net zero greenhouse gas emissions globally, and we seek to maximise influence to achieve this. In the long-term, this is the only effective strategy to mitigate the systemic effects on markets of climate change.

As such:

- We will resist pressure to modify portfolios to meet headline portfolio level decarbonisation targets at the expense of incentivising the necessary real-world transition. We believe it is important to engage with companies and governments and to supply enabling capital to achieve long term transformation and decarbonisation than it is to hit short term carbon footprint target metrics.

For example, emerging markets, which have higher carbon footprints, in part because they produce carbon intensive goods consumed by developed markets, require capital in order to transform their economies.

For these reasons, portfolio decarbonisation targets will continue to be reviewed at least every three years to ensure they remain appropriate.

3.5.2. Asset manager engagement

The Scheme Trustee expects:

- UK-regulated asset managers to be signatories of the Stewardship Code;
- Non-UK regulated managers to exercise their voting rights in a manner consistent with a focus on medium and longer term investment performance.

As part of their responsibilities, where applicable, the Trustee expect the Scheme's asset managers to:

- Engage with investee companies with the aim to protect and enhance the value of assets; and
- Exercise the Trustee's voting rights in relation to the Scheme's assets;
- Incorporate the Trustee's views on climate change risk and opportunities.

4. Risk Management

4.1. How we identify and assess climate change-related risks and opportunities

We recognise that climate-related risks can be financially material and that incorporation of identified risks and opportunities into risk management is therefore essential.

We have identified these risks in conjunction with our Investment Adviser who, in addition to their own research from their sustainability team have worked on identifying risks together with expert organisations such as the IIGCC, PCAF and MSCI.

The Trustee has identified the following risks as posing the greatest potential loss and being the most likely to occur:

- Risk 1 – we do not correctly identify portfolio risks from climate change - new risks are likely to emerge (physical, transitional and systemic);
- Risk 2 – insufficient policy action globally to avoid a “hot-house” scenario (the 3 degree scenario) – which results in longer term systemic risks from overall markets and negative effects for the portfolio;
- Risk 3 – policy action globally accelerates more quickly than anticipated leading to unexpected asset stranding and the portfolio is not able to capture the positive benefits in this scenario
- Risk 4 – correlated portfolio risks - while asset managers may consider the individual climate change related risks and opportunities per company or investment, the Trustee needs to consider them across the portfolio as a whole.

4.2. How we integrate these processes into overall risk management for the Scheme

The Trustee governs the portfolio and oversees the Investment Adviser, Investment Committee and the Scheme’s investment asset managers (Asset Managers) who help scan, measure and monitor the climate change risks and opportunities and determine their relevance to the Scheme. The Trustee along with their Investment Adviser, adopt a variety of methods to help with the analysis including:

- Reviewing relevant background material and identifying regulatory developments that are relevant to the Scheme, including guidance from the Pensions Regulator and Department for Work and Pensions;
- Engaging with peers, industry bodies and advisers;
- Identifying relationships between events and news, and business and financial impacts to manage reputational risks;
- Identifying and assessing physical and transitional risks over different time horizons;
- Considering the impact of physical and transitional (including operational) risk factors.

4.3. The risk management tools we – and our investment adviser – have used and the outcomes of using those tools

Scenario analysis allows us to consider potential outcomes in different scenarios and think through the impact on different individual positions and the overall portfolio.

Outcome: considering the appropriateness of the overall strategic asset allocation including the LDI strategy, the need for additional portfolio risk management and decisions on the appropriateness of each new investment from a climate perspective.

LDI hedging

The Trustee considers the appropriate level of LDI hedging.

Outcome: The Trustee has adopted an approach of maintaining the liability hedging in order to stabilise the funding target i.e. the assets move in line with the liabilities for shifts in interest rates and inflation expectations. The impact of climate change on real and nominal interest rates is highly uncertain in the different scenarios, so this hedging strategy eliminates that uncertainty on the funding ratio of the Scheme. However, this strategy does require sufficient collateral to maintain the LDI hedges in scenarios where interest rates or inflation expectations increase. Maintaining sufficient liquidity is part of the risk management strategy of the LDI portfolio.

Portfolio Analysis tools

In 2020, our Investment Advisor, Cardano, appointed MSCI as its external sustainability data provider. The appointment followed an RFP process which reviewed the service offerings of different providers. Cardano selected MSCI for a number of reasons, including the extent of its coverage, MSCI's research process (and as such, data reliability), and portfolio scenario analysis based on degrees of warming, following the acquisition of carbon delta in 2019⁴.

The appointment (and reappointment) is also overseen by our Investment Adviser's Group Sustainability Steering Committee.

This data provides insights into where climate risk may be most acute on a geographic, sectoral and individual security level both from a physical and a transition risk perspective. It is used by the Investment Adviser and Trustee to understand and discuss risk exposures. It is not particularly useful when considering systemic risks which tend to be underestimated in the models used, where the Investment Adviser makes use of their approach to macro scenario analysis.

Participation in industry groups working on methodology development, in particular, IIGCC and PCAF

The DWP's TCFD regulations set out multiple methodologies to determine corporate and sovereign greenhouse gas emissions metrics. There remain methodological challenges for 'hard to reach' asset classes, such as hedge funds, commodities and derivatives.

Cardano participates in and contributes to multiple industry initiatives to develop and evolve metrics and reporting on climate change, in particular, IIGCC and PCAF. IIGCC is the Institutional Investors Group on Climate Change, and it hosts the Paris-Aligned Investment Initiative and the Net Zero Investment Framework. The initiative sets out the advantages and disadvantages of the multiple methodologies used to determine a company's, and portfolio's, absolute emissions, emissions intensity, and more recently, environmental alignment.

Methodologies used to calculate GHG emissions: Typically, financed emissions (the emissions we are responsible for as an investor) are calculated using GHG emissions per unit of sales or per enterprise value. Our preference is enterprise value which we consider a more stable measure, allowing for year-on-year comparisons. Enterprise value consists of a company's equity, debt and cash, and goes by the acronym EVIC (enterprise value including cash). This aligns with MSCI and the recommendations of PCAF – the Portfolio Carbon Accounting Financials initiative.

Internal controls

Cardano has implemented internal controls in the preparation of TCFD metrics and scenarios, which we have reviewed. We assess these internal controls to ensure they are appropriate.

⁴ <https://ir.msci.com/news-releases/news-release-details/msci-strengthen-climate-risk-capability-acquisition-carbon-delta>

Finally, we note that there will be inaccuracies in the data. In some markets, corporate greenhouse gas emissions disclosures are not regulated, and not subject to audit. Scenarios rely on multiple assumptions. The quality of the data is constantly improving. We believe that the processes we have implemented are market-leading and mitigate for known limitations in data quality and coverage. We will continue to engage with standard-setters, policymakers, data providers and companies to improve data quality.

4.4. Understanding covenant risks

The Trustee recognises it is crucial to better understand the potential impact on the covenant of the effects of climate change, which can also impact on the long-term funding requirements of the Scheme.

To test the resilience of the Scheme's funding strategy, our covenant adviser, Cardano Advisory, has primarily focused on the downside risks which the covenant may be exposed to, to help inform the Trustee's strategic mitigation of climate scenarios.

The following assessment, carried out by Cardano has considered both the Scheme's employer G4S Limited ("G4S" or the Company) and Allied Universal ("AUS" or the "Group") given the Scheme's guarantee structure and the integrated nature of the Group's operations.

4.4.1. Scenarios analysis

Figure 2 below provides an overview of the scenario climate risk analysis over time on the covenant. The key findings from the risk analysis are as follows:

- In the near term, climate risks to the Scheme appear to be modest in both scenarios given the relatively low carbon-intensity and carbon footprint of the Group
- Over the medium term, risks appear to be greater in the Slow Transition scenario as the physical impacts of a changing climate, and the associated impact on the Group's operational locations and staff, begins to become more pronounced
- Over the longer-term increased physical risks in both scenarios will present greater challenges, albeit exacerbated in the Slow scenario. The medium risk in the Paris-Aligned scenario is in part related to the Group's sustainability targets being slightly behind that of its main competitors as well as the challenges the Group faces in decarbonising its vehicle fleet to meet net zero targets (particularly in areas of the world that may not have supporting infrastructure), which may mean the Group needs to look at other solutions, including offsets

Cardano has identified 'higher, medium and lower' risks, but note that this is a relative judgement of the scenarios and time horizons (rather than higher risks necessarily representing a genuine concern around the resilience of the sponsor).

Climate risks do not appear to pose a material threat to the covenant available to G4S and AUS over the near-term. However, risks appear to increase over the medium-term (Slow Transition) and longer-term (both scenarios).

Table 2: assessed climate scenario risk analysis over time

	Near term <i>Up to 2025</i>	Mid term <i>2025 to 2028</i>	Long term <i>2028+</i>
Paris – Aligned	Lower risk	Lower risk	Medium risk
Slow Transition	Lower risk	Medium risk	Higher risk

4.4.2. Covenant analysis conclusions

To address the risks noted above, the Trustee has considered the recommendations from the covenant adviser in each of the following areas:

- To integrate the climate risk analyses on covenant, funding and investment to assess whether these risks are correlated;
- To monitor the climate covenant risks identified in this assessment through the Trustee’s regular monitoring framework - e.g. progress in de-carbonisation of vehicle fleet, the impact of extreme weather events on business disruption and renewable energy pricing;
- To consider how the climate risk could impact the Scheme’s funding targets and desired end-game, including any acceleration in the journey planning time horizon, and any decisions on covenant risk transfer to another counterparty / insurer;
- To document identified climate related risks and mitigation strategies in an integrated way within the DWP mandated disclosures.

4.5. Understanding funding risks

Climate change may also impact the value of the Scheme’s pension liabilities, i.e. present value of future benefit payments. This impact could be via any or all of:

1. Changes in interest rate expectations,
2. Changes in inflation expectations,
3. Changes in life expectancy.

Whilst we acknowledge the possibility of 1) and 2), we have implemented a liability hedging strategy which manages the risk up to the value of the assets. This strategy helps to mitigate risk to our funding level from adverse movements in interest or inflation rates over time.

The Trustee has also engaged with the Scheme Actuary, Aon, to understand how various climate scenarios will impact the liabilities of the Scheme.

Aon have developed their thinking to consider the impact of climate change on individuals’ life expectancy, which they expect will vary by scenario and time horizon. This incorporation of mortality impacts means the scenarios analysed by the Trustee do not just consider economic variables, such as the impact on inflation or growth rates, but also reflect the demographic aspect which is important when considering pension scheme liabilities.

Aon have provided analysis of the mortality impact of scenarios that align closely with the scenarios chosen by the Trustee. Aon allow for the impact of each scenario on mortality through adjusting the parameters under the standard mortality tables which determine the rates of future improvements. Aon

provide an indication of the total mortality impact on liabilities in differing climate scenarios below.

Table 3:

Indicative impact of climate scenarios	Paris Aligned (1.5 °C)	Late Transition (2 °C)	Hot House (3 °C)
Mortality impact on Gilts+0% liabilities	+2%	-1%	-4%

Source: Aon. Notes: Indicative analysis only. Figures are based on the impact on male life expectancy (age 60) but each scenario impacts females to the same extent. The figures are appropriate for the overall profile of the Scheme and the discount rate being used for the Cardano | AIM modelling.

4.5.1. Interpreting the mortality impact

Paris Aligned scenario:

In the short to medium term Aon expect severe global economic stress in this scenario but a return to strong global growth over the longer term. With this in mind, disruption to health and social care services may increase mortality in the short term. Over the longer term, better air quality and improved health conditions may lead to lower mortality. The net effect under this scenario is an increase to liabilities.

Late Transition scenario:

Aon believe the short to medium term mortality improvements in this scenario are in line with the current expectations, however, over the longer term mortality improvements are slightly lower. The direct climate impact in this scenario is likely to be minimal, with overall a small reduction to liabilities.

Hot House scenario:

In the Hot House scenario Aon expect higher incidence of extreme weather events and more volatile financial markets to be a drag on economic growth. In such an environment, particularly where the drag on economic growth coincides with a lack of spending on health and welfare, they expect there may be no long-term improvements in mortality. This will have the effect of a noticeable reduction in liabilities relative to current expectations. In terms of the direct climate impacts, fewer deaths from warmer winters may more than offset any impact of heatwaves but the impact is likely to be marginal.

5. Metrics and Targets

5.1. Who is our data provider?

Approach to data collection

Our third-party Asset Managers are requested to provide climate-related analysis for their portfolios. This is to encourage our Asset Managers to carry out their own assessments and gain oversight of the climate-related risks and opportunities from the companies in which they invest.

For Asset Managers who fail to provide data for the purpose of TCFD reporting, our Investment Adviser produces the analysis based on proxy indices applied to the Asset Managers' portfolios. Our Investment Adviser employs the services of MSCI. Measuring the success of sustainability initiatives requires new types of data analysis. A third-party data provider allows us to improve our portfolio analysis and provide valuable insight into ESG factors that can have a significant impact on investment outcomes.

Our primary data source is MSCI ESG and Climate Scenario analytics, which we use to assess the sustainability of our own investments and those of our Asset Managers using analysis provided by Cardano⁵.

MSCI use reported, publicly available data, where available. Where it is not available, MSCI provides a proprietary estimation model, that uses reported data from similar industries, sectors and geographies to estimate a company's emissions. We believe that this, in turn, encourages companies to disclose, rather than be subject to estimations.

The quality of disclosure is improving, through voluntary and mandatory reporting initiatives. Examples include, the recent International Sustainability Standards Board climate-related disclosure standard, which has been endorsed by regulators, including in the UK and EU.

5.2. What are the limitations?

We recognise the importance of managing climate change-related risks and opportunities – but also the challenges involved in 'doing it well'. We continue to develop and evolve our policies to reflect climate change-related challenges. This reflects the evolution of our thinking on sustainability and the changes underway in the financial services sector, and society more broadly.

We are acutely aware that Asset Managers' methodologies can vary and whilst we encourage our Asset Managers to follow best practices and complete industry standard templates, there is a limit to the extent we can practically vet the data provided.

When measuring at portfolio level, where we aggregate the emissions of investee companies. We recognise that there remain gaps in data availability, in particular, regarding Scope 3 emissions.

Scope 3 emissions help us better understand a company's sensitivity to climate change-related risks and opportunities, and its ability to transition. It can therefore help to understand relative performance of different companies within industries.

While we believe companies should disclose their Scope 3 emissions, we note that there are a number of data challenges which will take time to resolve.

As shown in Table 4, approximately 27.8% (net credit and equity exposure financed) of the portfolio's assets are included within the emissions data. We recognise this does not cover most of the portfolio's

⁵ <https://www.msci.com/our-solutions/esg-investing/climate-solutions/climate-risk-reporting>

assets as disclosed in 3.3.1 and that this coverage level is a limitation when disclosing our emissions data. We note that the majority of equity issuing companies are already being covered and that the credit issuing company analysis is still developing but has been increasing over time.

5.3. Metrics

5.3.1. The metrics we have calculated

We calculate and disclose the following metrics:

- **Absolute financed emissions** – This is the total greenhouse gas (GHG) emissions, in carbon dioxide equivalent, of the portfolio. This is based on public market proxies where the Asset Manager does not provide data.
- **Carbon footprint** – This is the emissions intensity metric and is represented by the total GHG emissions in carbon dioxide equivalent per £m invested. This is based on public market proxies where the Asset Manager does not provide data.
- **Data availability (as shown as % coverage)** – This is the data availability across our portfolios. We will work with our Investment Adviser and our asset managers to engage companies, policy makers and data providers to improve data quality and coverage.
- **SBTi alignment metric** – Our estimated alignment is 3.9% of the portfolio. This is the percentage of the portfolio exposure having set Science Based Targets to align with either a 1.5 degree or 2 degree climate scenario. We use the Science-Based Targets Initiative (SBTi) framework which assesses the ambition of a company's Scope 1 and 2 targets.

Useful definitions⁶:

SCOPE 1:

These emissions result from sources directly owned or operated by the business. For example, does the business have a fleet of vehicles? Do they burn fossil fuel? Maybe the business has buildings with boilers.

SCOPE 2:

These are emissions based on energy the business purchases to directly operate their enterprise. The most common across-the-board example is electricity consumption.

SCOPE 3:

Emissions resulting from activities not directly owned by the business but are associated with its operation. Examples; business travel, waste management, commuting, third-party distribution. Upstream emissions come from the production of the business's products or services, while downstream emissions come from their use and disposal.

CARBON DIOXIDE EQUIVALENT:

Carbon dioxide equivalent, or CO₂e, is a metric measure used to compare the emissions from various greenhouse gases by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

⁶ Source: <https://ec.europa.eu/eurostat/statistics-explained> and <https://www.southpole.com/sustainability-solutions/ghg-accounting>

Table 4: Emissions associated with our direct financed exposure

Asset class	% exposure financed	% coverage	Absolute Financed Emissions tCO2e		Carbon Footprint: Emissions intensity tCO2e/£m invested	
			Scope 1+2	Scope 3	Scope 1+2	Scope 3
Private Equity	20.4%	69.1%	20,467	115,475	49.7	280.6
Credit	7.4%	100.0%	11,805	125,811	79.1	842.7
Total	27.8%	77.4%	32,272	241,286	57.5	430.3

Source: Cardano. Data represents exposure and fund holding data as at 31/03/2024

Interpreting the results:

- The absolute emissions tell us the emissions associated with our investments. While an important metric for us – and the regulator – it is difficult to use this metric for comparison purposes, because it is dependent on the size of the Scheme at the point we conduct the analysis.
- Therefore, we disclose an emissions intensity metric (or carbon footprint), which is the total GHG emissions per £1m invested. This is useful, because, while subject to market fluctuations, it allows us to compare our emissions year-on-year and help us check we are moving in the direction of achieving our targets. For example, both the absolute emissions and emissions intensity should tend to 0 if we're to meet our net zero target.
- The emissions data **does not** include the Scheme's exposure to:
 - Cash.
 - Exposures to funds that have minimal credit and equity exposures or invest in these securities over a short time horizon, mostly using derivatives. These funds include hedge fund strategies and other liquid alternative strategies. We note that these strategies have to date been "hard to reach", but progress is being made via industry groups such as the IIGCC.

We report sovereign bonds carbon footprint separately from this measure for several reasons:

1. There is no comparable measure for sovereign bonds to financed EVIC (enterprise value including cash) i.e., sum of the market capitalisation of ordinary & preferred shares, book value of debt and non-controlling interests and cash
2. Total Sovereign country greenhouse gas emissions involves substantial double counting of emissions with corporate greenhouse gas emissions, and
3. We believe adding sovereign numbers to corporate numbers can substantially obscure the dynamics of monitoring the changes to the portfolio's corporate emissions intensity over time.

Our preferred approach to Sovereign emissions is to use a metric that is as close to and consistent with an emissions intensity metric. We show two metrics for the Scheme's Sovereign bond exposure.

1. **A consumption per capita intensity metric.** A consumption-based emissions metric attributes the emissions generated in the production of goods and services according to where they are consumed, rather than where they are produced. This is a per capita metric, to represent the emissions of an average person in a country.
2. **A production intensity metric.** This is a weighted carbon intensity metric that uses Gross Domestic Product (GDP) in the disclosure. We use the PPP-adjusted GDP metric that allows for comparing the real size sizes of economies / sovereigns. Purchasing Power Parity (PPP) adjusted GDP has gained popularity as per the Partnership for Carbon Accounting Financials' recommendation.

Sovereign bond carbon footprint

Country	Physical Bond Exposure	Derivative Exposure	Consumption Intensity per Capita (tCO2e)	Production Intensity per GDP-PPP (tCO2e)
UK	54%	24%	7.9	116.8

Source: Cardano. Data represents exposure and fund holding data as at 31/03/2024.

5.4. Targets

5.4.1. The target we have set in relation to the metrics we have calculated, and as far as you are able, your scheme's performance against that target

The Trustee has set the following principal target with respect to the Scheme:

- To align our investments to support the goal of net zero greenhouse gas emissions by 2050, in line with global efforts to limit warming to 1.5°C.

Specifically, we commit to:

- Work in partnership with other asset owners on decarbonisation goals, consistent with an ambition to reach net zero emissions by 2050 or sooner.
- An interim target for 2030, consistent with a fair share of the 50% global reduction in greenhouse gases, identified as a requirement in the IPCC special report on global warming of 1.5°C⁷, based on 2019 levels. 2019 is the baseline year as we have confidence in the climate change data from this year and is prior to the Covid 19 pandemic, which due to lockdowns, saw fluctuations in fossil fuel use.
- Review the progress against our target every year, and to review the target itself at least every three years, to ensure it remains consistent with the latest scientific thinking and is appropriately incentivising the necessary economic transition.

The portfolio Carbon Footprint will be measured against these targets.

Our objective is to achieve where possible decarbonisation through the transformation of underlying businesses and government activities rather than divestment (because it is in our members' interests to decarbonise the economy-as-a-whole, and by remaining invested we retain our influence on the companies that must transition). When doing so, we consider two simultaneous objectives:

1. Aiming for the best financial risk/reward
2. Aiming for the maximum influence and impact in achieving the target objectives because we believe this helps address the systematic risks associated with climate change

5.4.2. The steps we are taking to achieve our target

Our Investment Adviser has committed to:

- Provide us with information, metrics and analytics on net zero greenhouse emissions by 2050 investing and climate change-related risks and opportunities.
- Engage with those key to the investment system including data and service providers to ensure that products and services available to the Trustee are consistent with the aim of achieving global Net Zero emissions by 2050 or sooner.
- Ensure any relevant direct and indirect policy engagement is undertaken in support of achieving global net zero greenhouse gas emissions by 2050 or sooner.

⁷ <https://www.ipcc.ch/reports/>

We will:

- Take account of and report on progress against Scope 1 and 2 emissions and, to the extent possible, material portfolio Scope 3 emissions.
- Prioritise the achievement of real economy emissions reductions within the sectors and companies in which we invest.
- Use the reporting provided by our Investment Adviser to help us assess progress towards our targets.
 - Whilst we expect our portfolio to trend towards our 50% emissions reduction target by 2030, we'll take the decisions necessary to align the portfolio consistent with our net zero emissions by 2050 goal.

5.4.3. The method we used to measure performance against our target

We have developed a Net Zero decarbonisation framework with our Investment Adviser which is being applied to the management of the Scheme's assets in order to help the Trustee achieve its decarbonisation targets. The framework is based off a four-stage process:

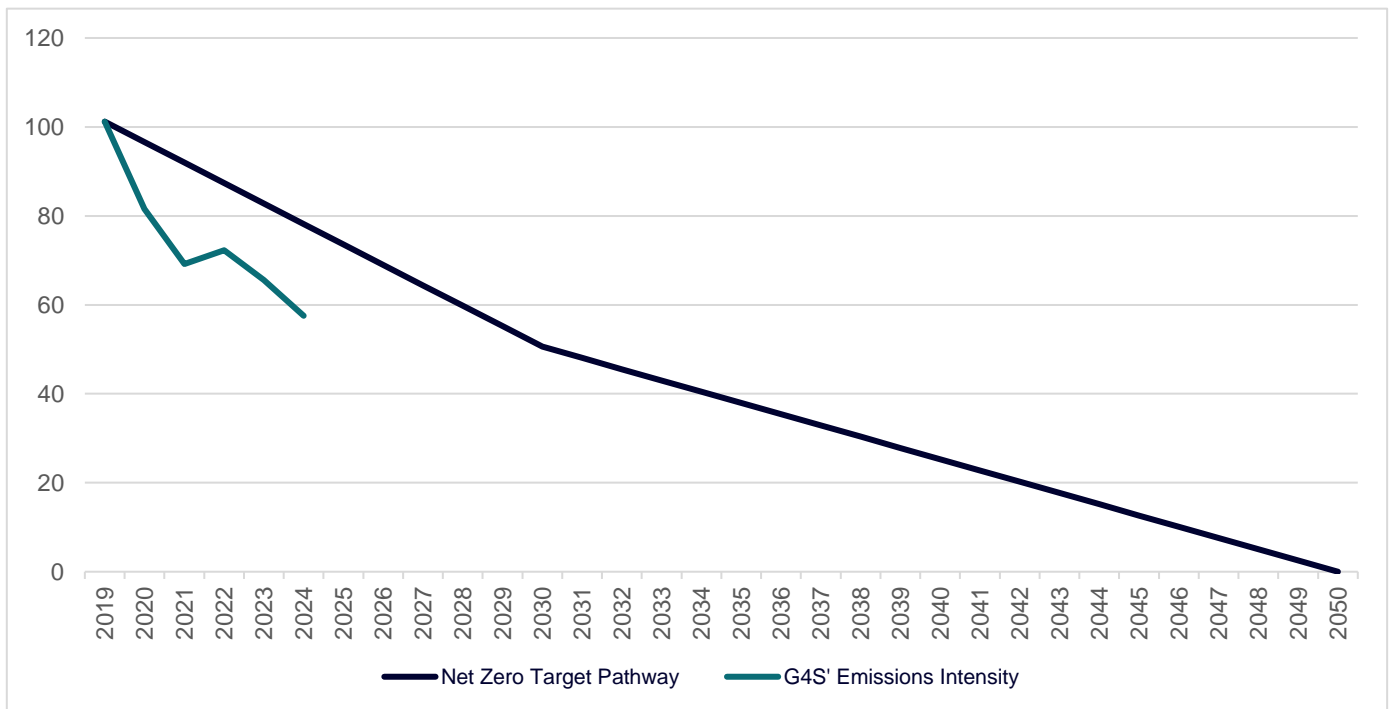
1. **Influence and Support** – influence and support companies to change, remain invested in those with credible plans. This is implemented through engagement with our Investment Adviser and our Asset Managers.
2. **Avoid or underweight** - avoid companies we think will not successfully make the transition and represent stranded assets and underweight assets that are less likely to successfully transition. Again, this is implemented through engagement with our Investment Adviser and Asset Managers.
3. **Measure** - measure progress made in the broad markets and economies, and in the portfolio holdings towards Net Zero. Measure or assess the managers capabilities in influence and impact
4. **Re-assess** - assess the portfolios progress against the planned Net Zero pathway and decide how the approach needs to be adjusted.

We have constructed a Net Zero Pathway (Chart 1) for the Scheme given our target timeframes.

Notes to support Net Zero Pathway analysis

- The Carbon Footprint emissions target uses an emissions intensity metric, which is the total GHG emissions per £1m invested. This is useful, because, while subject to market fluctuations, it allows us to compare our emissions year-on-year and help us check we are moving in the direction of achieving our targets.
- Both the absolute emissions and emissions intensity should trend to 0 net greenhouse gas emissions (not adding greenhouse gases to the atmosphere) if we're to meet our Net Zero target by 2050
- Fully assessing progress of the portfolio towards Net Zero will still take some time. Data is limited in some asset classes so we will continue to first focus on the equity and credit where we have the greatest insight and can have most influence. We therefore show the Long Equity and Credit Carbon Footprint for the Scheme (as shown in Chart 1).
- This analysis is used to monitor our long-term effort to contribute to decarbonising the economy. Therefore, we do not include the Short Equity and Credit impact, as it does not remove GHG emissions from the atmosphere. It is, however, useful when considering the climate risks of our portfolio.

Chart 1: Net Zero Pathway



Source: Cardano

Notes: *This represents the Long Equity and Credit from 2019

Interpreting Chart 1 and the 2 lines shown:

- Because we believe issues remain with the quality and coverage of the data, our framework currently focuses on Scope 1 and 2 emissions.
- The Net Zero Target Pathway comprises three key data points: Our estimated emissions as of 2019 (our base year), our 50% emissions reduction target by 2030, and our 100% emissions reduction target by 2050.
- G4S' Emission intensity is our actual annual emissions. This was estimated in 2019, 2020, 2021 and 2022, and records our portfolio's actual carbon footprint in 2023 and 2024. This will be updated annually.

Conclusions

- The Trustee has established the Net Zero Decarbonisation framework to support the long-term monitoring of our carbon footprint. We recognise that we have limited data points and so are cautious when drawing conclusions from these short-term results
- As at 31 March 2024, the Scheme is tracking below the Net Zero Target Pathway i.e. the actual emissions are less than our Net Zero Decarbonisation target. Therefore, with the release of the latest emissions data on a standalone basis, the Trustee believes there is no reason to change the investment strategy.

6. Appendix – Climate Scenario Analysis

Approach to developing the scenarios

Global warming is currently at 1.1 degrees above pre-industrial levels. Given that human related GHG emissions will continue to accumulate in the atmosphere at a substantial pace over the next 7 years *regardless of action to decrease emissions*, the trajectory of climate change over this medium-term period is very similar in all three scenarios - i.e. whether we are ultimately on a +1.5, +2 or +3 degree pathway, we expect that we will continue to experience more and more extreme weather over the coming years. However random variation can lead to substantial variations in actual impacts of weather from year to year around the scenario path. For this reason, we assume similar actual weather outcomes in the +1.5 and +2 degree scenarios and more severe fluctuations and impacts under the +3 degree scenario. This leads to greater physical and economic impacts in the +3 degree scenario.

Under both a +1.5 or +2 degree scenario, we invite you to imagine that the following weather scenario might unfold⁸: Over the next seven years, the world witnesses a series of increasingly severe climate events, beginning with a "Super El Niño" in 2024 with the warmest global temperatures on record, exacerbating droughts, floods, and heatwaves in certain regions. Transitioning to La Niña in 2025 brings its own set of challenges, including wildfires, flooding, and agricultural disruptions in other regions, especially some emerging markets. The following years see persistent La Niña conditions triggering continued extreme weather events, and humanitarian crises in those regions. By 2028, intensifying tropical storms, including hurricanes and cyclones, wreak substantial damage in the US and Asia, while India suffers from an unprecedented heatwave. Meanwhile, Europe experiences milder winters and longer growing seasons. In 2030, the world grapples with unprecedented wildfires, severe flooding in coastal regions, and prolonged droughts in Western Africa, all underscored by the Arctic's record-low sea ice extent, highlighting the urgent need for comprehensive climate action amidst escalating environmental fragility.

In the +3 degree scenario, imagine similar overall climate set of outcomes to the above, but add to this scenario that some of these weather impacts, by pure misfortune and random chance, happen back-to-back and happen in particularly impactful regions for the global economy and global food production, compared to a more fortunate spread of outcomes in the other two scenarios.

Our scenario narratives

The government policy responses, economic outcomes and consumer response to climate change over the medium-term time horizon vary across the three scenarios leading to different outcomes for markets and portfolios over this medium term time horizon. These are described below together with their implications.

1.5 Degrees

⁸ This climate scenario is loosely adopted from the USS/Exeter University paper "No Time to Lose" which gives a much more comprehensive description of such a scenario and adopts a similar approach to that outlined here.

Scenario outline

High levels of government and consumer intervention are triggered by extreme weather events and growing global pressure for action. Society responds through their spending behaviour, political activism and voting. Governments respond as they recognise the changing public attitude and large economic appetite for the green transition. Geo-political alignment emerges from the COP process, with countries agreeing coordinated initiatives to meet global targets. Supportive policies come into effect to target aggressive Net Zero implementation and climate adaptation. Tax revenues from carbon and resource intensive consumption and public investment is used to support and fund greener alternatives, resilient infrastructure programs and accelerate efforts to catch-up with China's leading renewables programme.

Physical Risk – Moderate

Each year across the globe different regions are affected by extreme weather events that result in destruction of property, flood damage, and disruption to transport and industry. Sea level rises impact coastal areas with more severe storm damage. In other areas extreme heat waves, drought and water shortages cause modest disruption to regular economic activity. The effects are felt by both business and consumers. Both developed and developing countries experience droughts and changing rainfall patterns which disrupt crop yield and livestock production in some years impacting crop yields leading to temporary food shortages and price spikes in essential commodities and inflation. Insurance losses mount. Portfolio effects are felt through the impacts on the physical locations and supply chains of businesses and consumer demand.

Strong investment in flood defence and other infrastructure leads to mitigation of some of these effects in this scenario. In addition, alternative solutions are implemented to support essential food, energy and climate adaptation and most areas remain covered by insurance with the exception of some coastal areas that are over-exposed. After several years, the aggressive Net Zero initiatives start to slow the pace of increases to atmospheric green-house gases, meaning the more extreme environmental tipping points are more likely to be avoided.

Transitional Risk – High

Governments introduce intense green taxation policies on carbon-intensive industries. Reputational risks weigh on companies failing to transition to a greener economy and they are publicly held to account as consumers switch to cleaner alternatives. Carbon pricing significantly increases, putting a large revenue strain on those heavily reliant on fossil fuels and companies are forced to quickly invest in green technology to improve their carbon footprint. Stranded asset risk is high, particularly in fossil fuel industries. Conversely companies with technology and intellectual property that provide solutions benefit from the substantial positive investment in scaling up solutions, offsetting some of the transitional risks.

Systemic Risk – Moderate

Public policy leads to positive robust growth as public and private innovation and investment increases. Revenues from green taxation are directed into green investment and infrastructure, boosting economic growth. Interest rates increase modestly as investments produce strong returns and inflation rises modestly with booming demand for new capital stock but strong productivity growth. Carbon pricing systems provide financial transition support to labour from now-stranded carbon-intensive industries, limiting downside risk. Developing markets receive large funding support following COP agreements and their economies are boosted, accompanied by high inflation, as they emerge as major exporters of solar-based fuels and climate friendly agriculture.

Portfolio Impact – Positive

Basic assumptions: strong growth and modestly higher inflation and productivity lead to modestly higher real rates but net positive equity market in aggregate despite negatives on some transition companies, not very strongly positive due to the risks of stranded assets and transitions. Big losers: Canada, High cost oil producers including offshore (UK, Brazil), Big winners: China, oil importers.

Overall, the portfolio and funding ratio would most likely benefit, as strong economic growth from accelerated public and private investment offsets some of the negative transitional and physical risks leading to positive overall returns from growth assets.

The high transitional and physical risks create greater dispersion between “winners” and “losers”: the former being companies and countries which are well prepared for and able to contribute to a greener world or with strong adaptation policies, and infrastructure related businesses benefit; and the latter being companies that are negatively affected by increased taxation/carbon pricing policies, and with stranded fossil fuel assets. Businesses with supply chains in higher risk physical locations are still affected especially those which are highly indebted. In this scenario countries with strong reliance on fossil fuel export revenues (and high costs of production) are likely to be most negatively impacted, including Canada, the US and some middle eastern countries. The UK and Brazil are negatively affected as expensive deep sea oil and gas production becomes stranded. The US is least affected due to its diversified economy. Countries more reliant on fossil fuel imports and transitioning quickly to renewables benefit including China and the broader emerging markets.

While growth assets do well in this scenario, liabilities are well hedged. On the back of strong growth, real rates increase modestly reducing liability values in this scenario despite higher inflation but these are matched by modest losses on LDI hedges. The unhedged deficit shrinks.

2.0 Degrees

Scenario outline

Geo-politics and climate denialism delay action to fight global warming. Global co-operation on Net Zero efforts is stymied as politicians and media channels focus on living standards and energy security. Through the decade, extreme weather damage leads to consumer and investor pressure to act on climate change but progress is patchy and erratic.

Some countries in Europe persevere with their Net Zero goals, investing in greener technology, but growth is limited with supply-chain issues. Climate policies are initially local and patchy but mounting pressure through the decade leads to the return of and support for politicians who target climate action. Finance flows towards affected emerging markets for loss and damage and eventually the developed world succeeds in persuading China to join forces.

Physical Risk - Moderate

Similar to the 1.5 degree scenario: Each year across the globe different regions are affected by extreme weather events that result in destruction of property, flood damage, and disruption to transport and industry. Sea level rises impact coastal areas with more severe storm damage. In other areas extreme heat waves, drought and water shortages cause modest disruption to regular economic activity. The effects are felt by both business and consumers. Both developed and developing countries experience prolonged droughts and changing rainfall patterns which disrupt crop yield and livestock production in some years impacting crop yields leading to food shortages and temporary price spikes in essential commodities and inflation. Insurance losses mount. Portfolio effects are felt through the impacts on the physical locations and supply chains of businesses and consumer demand.

The growing frequency and intensity of extreme weather gradually pushes climate focus up government agendas. However the mitigating effects of climate adaptation measures are more limited. Limited investment in infrastructure driven by budget constraints and the slow rollout of such measures mean greater losses are absorbed by portfolio exposures and certain areas become uninsurable.

In emerging markets, where weather shocks and crop failures are worst felt, economic and political instability increases and supply chains are impacted.

Transitional Risk – Moderate

Over the next few years, governments and businesses operate under loose initiatives to tackle climate change with limited taxation. Some companies recognise the appetite for greener technology and continue on their paths to Net Zero, posting positive growth. Pressure from consumers, society and investors starts to slowly build as the effects of global warming are strongly felt. Society becomes increasingly more supportive of businesses on following a Net Zero path and consumers shift away from companies with poor reputations. Later through the decade, the shift to greener companies starts to emerge and strong climate policies come into force, first in Europe, to mitigate the damage from delayed action.

Systemic Risk – Moderate

The return to normality in inflation leads to a decline in interest rates and a surge in economic growth over the next few years which sparks an upturn in lending and investment in proven tech opportunities, creating a tech-led boost in equity markets. Businesses manage to navigate the complex political landscape but eventually material shortages emerge and the next few years are followed by bouts of renewed inflation, exacerbated by weather-related spikes in food prices.

Subsequently, the burst in growth and rising inflation prompts central banks to raise interest rates again. After a slowdown, policy makers are forced to step in with renewed monetary stimulus and fiscal responses though these are limited by budget deficits and debt levels resulting in anaemic growth over the remainder of the decade.

Portfolio Impact – Moderate

Basic assumptions: short term strong growth followed by anaemic growth constrained by deficits, lowest inflationary pressures. Neutral on our equity bond and inflation assumptions.

Over the short-term, the portfolio is expected to benefit from an initial growth environment led by the technology industry. The majority of growth assets (e.g., equity, credit and private markets) benefit from the boom and the portfolio holds up well.

But, over the longer-term, companies and sovereigns post flat or negative growth with more limited investment and fiscal spending means returns are likely to be volatile. As climate taxation comes into force, the portfolio may need to transition to assets which are making good progress in green tech and benefiting from increased investment and away from highly indebted positions.

On the liability side, the impact on interest rates and inflation is uncertain. However, the liability hedging approach should protect the portfolio which-ever the outcome.

3.0 Degrees

Scenario outline

Geopolitical conflict and division detracts from global efforts in climate policy. Tensions across the world, particularly between China and the US, and US domestic political deadlock slow global decarbonisation efforts and technological progress. Diminishing trust between nations undermines any hopes of Net Zero collaboration through COP. We initially see low levels of government and consumer intervention and climate policies shift to local efforts, not global, with many countries failing to meet their Net Zero commitments.

Private investment continues to accelerate but well below the levels required to create massive scale in the implementation of affordable green technology. The unfortunate back to back experience of extreme weather over several years impacts multiple food basins, reducing crop productivity and food availability and generating sustained high inflation. Climate protests gain little traction as extreme weather events compound political and economic problems and result in social instability where food and energy security

take precedence. Inequality grows as masses are severely impacted by extreme weather conditions and rising prices of scarce resources drives the wedge further.

Physical Risk – High

An unlucky combination of back to back weather occurrences over 2 years lead to simultaneous droughts and severe storms across the world. Droughts affect several major crop producing regions, disrupting crop yield and livestock production, while water shortages and the extreme heat waves affect tourism in some regions. The demand for resources and successive years of major crop failures drives up prices globally. Electricity supply in some regions is disrupted and economic productivity is impacted negatively. In other regions the more severe storm seasons create particularly large losses for insurers through flood and storm damage. This results in more severe destruction of property, flood damage, and disruption to transport and industry. Sea level rises impact coastal areas with more severe storm damage. All of these effects contribute to increased healthcare costs for individuals affected.

Portfolio effects are felt to a greater degree than in other scenarios through the impacts on the physical locations and supply chains of businesses and consumer demand.

Property, businesses and critical infrastructures are severely damaged in several countries requiring increased funding support from governments who are already experiencing budgetary pressures, diverting funds from investment and productive growth. As we progress through the decade, commercial property insurance is retracted from areas subject to high acute physical risk and insurance losses lead to substantially higher premiums. Investors also become acutely aware of the location of production facilities and supply chains for specific businesses, increasing risks across affected sectors.

As the decade closes scientists become increasingly concerned that the world is on track to exceeding several climate tipping points. This leads to greater discounting of physical risks in asset prices

Transitional Risk – Initially Low, but increasingly uncertain

The lack of climate policies and green taxation puts less initial strain on companies to transition to a greener world. Investment in renewable development is modest with businesses focusing more on continuing their operations as normal. Political attention is focused on keeping prices as low as possible, rather than diverting activity away from damaging fossil fuel practices. However, the extreme weather events lead to increased political pressure and different countries adopt uncoordinated approaches. These sudden swings in policy create heightened uncertainty for investors, driving up risk premia in companies with high emissions.

Systemic Risk – High

Productivity is negatively impacted while inflation remains stubbornly high. Poor market environments stem from political, economic and financial turmoil, which further disrupts trade flow and supply chains. This reduces productivity growth and raises inflation and interest rates. Geopolitical tensions rise and divergent policy responses create uncertainty and increasing risk premia. Financial markets are increasingly volatile in the face of food shortages, recessions and political instability and unemployment runs high. Banks and governments are hit by huge losses on corporate and sovereign failures which fall back on state support. Emerging markets suffer from weak economic activity, limited trade and the failure of developed markets to provide financial support. China benefits from its dominance in renewables and access to materials but its exports are damped by weak global growth.

Portfolio Impact – Negative

Basic assumptions: high inflation and low productivity lead to, high short term rates, inverted yield curves, lower long dated real rates but higher nominal rates, net negative equity market in aggregate, big losers: emerging markets impacted by climate, big winners Europe

Overall, the portfolio is negatively affected with lower transition risks more than offset by higher physical

and systemic risks. Growth assets would struggle from the rising physical risk and low productivity, and company revenues would be directed to recovering against harsh weather conditions as insurance policies are pulled. High interest rates and persistent inflation make it difficult to finance new investment. Many regions would be severely hit, particularly emerging markets, and the portfolio would struggle to deliver positive returns.

It's likely the strategy would need to be revisited to focus on assets and countries which are more resilient to climate change and which benefit from the increased demand of natural resources and need for renewable technology. Fossil fuel assets, while initially benefiting from a slower transition, in the longer term would be subject to increasing risk premia from erratic government responses and lurches in policy. The portfolio would need to focus more on assets that provide inflation protection including against volatile food and agricultural prices, and on stocks that can contribute strongly to climate adaptation such as infrastructure investment.

On the liability side, high short-term interest rates lead to inverted yield curves and the combination of lower levels of real interest rates with higher inflation risk premia may mean higher liability values. The LDI portfolio mitigates the risks of this for the funded assets, though the unfunded deficit grows.

Definitions of Net Zero Alignment under IIGCC⁹ guidelines

Achieving Net Zero: companies that have current emissions intensity performance at, or close to, net zero emissions with an investment plan or business model expected to continue to achieve that goal over time.

Aligned to Net Zero: Meeting criteria 1-6 (or 2, 3 and 4 for lower impact companies*). And adequate performance over time in relation to criterion 3, in line with targets set.

Aligning to Net Zero:

- Have set a short or medium-term target (criteria 2);
- Disclosure of scope 1, 2 and material scope 3 emissions (criteria 4);
- A plan relating to how the company will achieve these targets (partial criteria 5).

Committed to Aligning: A company that has complied with criteria 1 by setting a clear goal to achieve net zero emissions by 2050.

Not Aligned to Net Zero: All other companies

*Higher impact sectors are a specified set of sectors and subindustries responsible for the largest portion of GHG emissions.

Criteria for Assessing the Alignment

Assess higher impact companies against the following high level current and forward-looking alignment criteria that constitute a Net Zero Transition Plan:

1. **Ambition:** A long term 2050 goal consistent with achieving global net zero.
2. **Targets:** Short- and medium-term (5 to 10 year) emissions reduction target (scope 1, 2 and material scope 3).
3. **Emissions performance:** Current emissions intensity performance (scope 1, 2 and material scope 3) relative to targets.
4. **Disclosure:** Disclosure of scope 1, 2 and material scope 3 emissions.
5. **Decarbonisation Strategy:** A quantified plan setting out the measures that will be deployed to deliver GHG targets, proportions of revenues that are green and where relevant increases in green revenues.

⁹ <https://www.parisalignedinvestment.org/>

6. Capital Allocation Alignment: A clear demonstration that the capital expenditures of the company are consistent with achieve net zero emissions by 2050.

Additional criteria that are part of a company's overall net zero transition plan that should be incorporated where feasible, as data availability increases, include:

7. Climate Policy Engagement: The company has a Paris-Agreement-aligned climate lobbying position and demonstrates alignment of its direct and indirect lobbying activities.

8. Climate Governance: Clear oversight of net zero transition planning and executive remuneration linked to delivering targets and transition.

9. Just Transition: The company considers the impacts from transitioning to a lower carbon business model on its workers and communities.

10. Climate risk and accounts: The company provides disclosures on risks associated with the transition through TCFD Reporting and incorporates such risks into its financial accounts.

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