

BASF UK Group Pension Scheme

Climate change report

A report for members by the Trustee of the BASF UK Group Pension Scheme (the “Scheme”)

Scheme year to 31 December 2022

The UK has become the first G20 country to make it mandatory for UK’s largest companies and financial organisations to disclose their climate-related risks and opportunities. This is part of the UK Government’s stated commitment to making the UK financial system the “greenest in the world”.

This report provides members the opportunity to find out more about the work of the Trustee in relation to climate change. It describes how the Trustee has identified, assessed, and managed climate-related risks and opportunities during the Scheme year, and is published alongside the annual report and accounts.

It is the first climate change report by the Trustee, using the Taskforce on Climate Related Financial Disclosures (TCFD) framework.

We hope you find it informative and would welcome any feedback.

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Executive Summary

The Trustee received training from its advisers to understand how climate risk and opportunities may affect the Scheme, and to implement required activities to identify and protect against such risks.

The Trustee has defined its stewardship priorities (listed below), and communicated these to the Scheme's asset managers, to be considered when making investment decisions, engagement, and voting.

- Climate change
- Business ethics and transparency
- Diversity, equity, and inclusion

The Trustee has defined a governance structure and responsibilities for its Board, relevant Committees, and advisors, to ensure effective governance of climate risks and opportunities.

For identification and assessment of climate-related risks and opportunities, the Trustee has defined the following time horizons:

Scheme Section	Short-Term	Medium-Term	Long-Term
DB Sections	4 years	9 years	15 years
DC Sections	4 years	9 years	20 years

The Trustee has carried out climate scenario analysis to consider how these risks and opportunities might affect the funding and investment strategy. For the DB Sections, it did not show the need to make investment changes, since these are mostly de-risked, and the Chemetall Section has invested into equity funds with climate tilts. For the DC Section, it was concluded that sustainable allocations, including those already implemented by the Trustee, can help to protect against climate risks.

A review of the sponsor's exposure to climate risks showed that BASF has made commitments to net-zero, and it has created dedicated units to achieve its climate targets. Additionally, BASF is recognised as a benchmark within the chemical industry according to leading ESG rating agencies.

The asset managers' climate practices showed that all are committed to net-zero targets, have responsible investment policies in place and consider climate risk in their investment decision process. The Trustee understands this is an evolving topic and encourages them to enhance their approach where appropriate.

The Trustee has collected climate metric data on the Scheme's assets, including total greenhouse gas emissions (absolute emissions metric), carbon footprint (emissions intensity metric), proportion of the portfolio with Science Based Targets (SBT, to reduce emissions) (portfolio alignment metric) and data coverage (non-emission metric).

From the climate metrics collected for the DB and DC Sections, the Trustee has selected to set a target against data coverage for the DB Sections, and a net zero greenhouse gas emissions by 2050 target for the DC Section (covering listed holdings where data is reported). The rationale for these targets is outlined later in this report.

This report is prepared by the Trustee of the BASF UK Group Pension Scheme and published in accordance with its obligations under the Climate Change Governance and Reporting Regulations 2021:


diane welsh (Jul 5, 2023 11:04 GMT+1)

Diane Welsh – Trustee Director

Introduction to the Scheme

BASF Pensions Trustee Limited (the Trustee) is required to produce a yearly Climate change report to set out how it has implemented requirements towards Governance, Strategy, Risk Management, Climate-related metrics, and targets.

The Trustee is responsible for ensuring effective governance of climate-related risks and opportunities in relation to the Scheme.

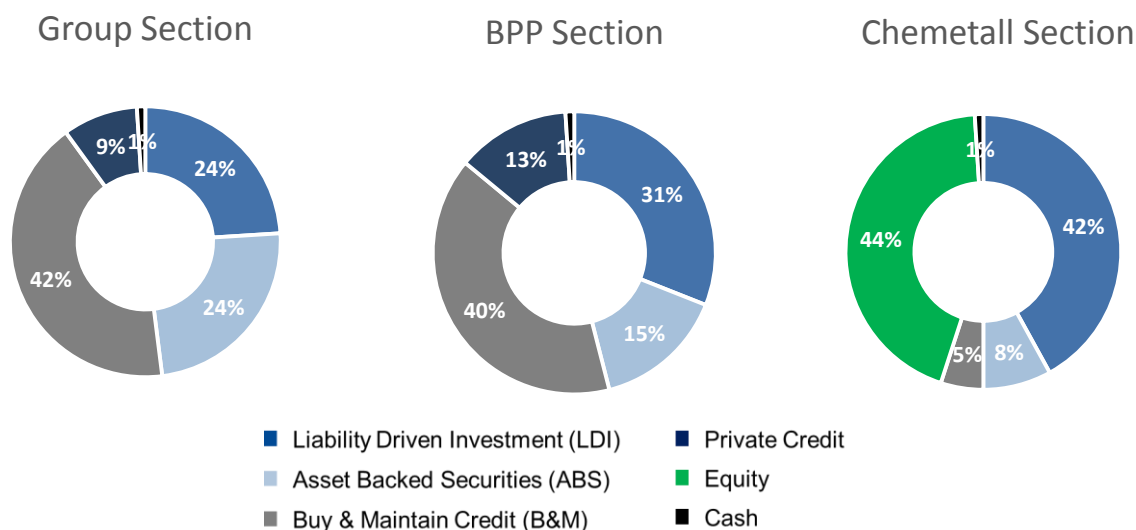
The DB and DC sections have their independent sub-committees (an Investment Committee for the DB Sections, and a DC Committee for the DC Section), which are responsible, according to the attributions from the Trustee Board, for implementing climate related requirements. The risks and opportunities relating to DB and DC arrangements differ, and the Scheme also retains different specialist advisers for the DB and DC Sections. Accordingly, the Sections have been separated for reporting purposes.

This report considers all sections within the Scheme, which are described in further details below.

DB Sections

- **Group Section:** assets of c.£450m and funding level of 106% on the agreed 2020 technical provisions funding basis as at 31 December 2022
- **BASF Performance Products (BPP) Section:** assets of c.£740m and funding level of 103% on the agreed 2020 technical provisions funding basis as at 31 December 2022
- **Chemetall Section:** assets of c.£29m and funding level of 79% on the agreed 2020 technical provisions funding basis as at 31 December 2022

Asset allocation per DB Section



DC Section

The Scheme offers members of the DC Section “LifePlan” and “FreePlan” investment options.

For members who wish to adopt an automated de-risking path on their approach to retirement, LifePlan is a ready-built investment route that reduces risk automatically as a member approaches their Target Retirement Date. Members can select a growth phase fund from the three risk-profiled funds (Adventurous, Moderate, or Cautious Fund), along with a benefit option to target at retirement, from cash, annuity (guaranteed income) or drawdown (flexible income). The default investment strategy is the Moderate Flexible Income LifePlan.

The FreePlan fund range is a selection of investment funds which aim to meet the varying investment needs and risk tolerances of members on a “self-select” basis. A description of all funds available to members is provided below.

Fund	Asset Allocation	Objective	Value at 31/12/2022 £000s
Moderate	50% Global Equities 50% Diversified Growth Funds	To achieve medium to high capital growth over the long-term with medium to high risk by investing predominantly in shares and other growth assets with some potential allocations to bonds.	97,304
Adventurous	100% Global Equities	Seeks to achieve high capital growth over the long-term with high risk by investing in shares.	71,301
Cautious	33% Global Equities 32% Diversified Growth Funds 35% Bonds (corporate & government)	To achieve medium capital growth over the long-term with medium risk by investing in shares and other growth assets including an allocation to bonds.	13,089
Pre-Retirement Annuity	100% Bonds (corporate & government)	To provide exposure to assets that reflect the investments underlying a typical level annuity.	26,413
Sterling Liquidity	100% Money Market instruments	To provide capital stability and a return in line with money market rates whilst providing access to liquidity.	19,049
Ethical	100% Global Equities	To track the total return of the FTSE4Good Global Equity Index.	9,205
HSBC Islamic	100% Global Equities	To track the DJ Islamic Titans 100 Index and to maintain compliance with Islamic Shariah principles.	9,665

Trustee Governance

Climate change is a financially material factor for the Scheme. It is a systemic risk to society, the economy, and the financial system (although the transition to a low carbon economy also presents opportunities). The Trustee believes that these risks and opportunities have the potential to impact the Scheme’s investments, the sponsoring employer, and the funding position in a financially material way over the short, medium, and long term. In its Statement of Investment Principles (SIP), the Trustee notes that Environmental, Social and Governance (ESG) and ethical factors (including, but not limited to climate change) should be considered in the selection, retention, and realisation of investments, given the time horizon of the Scheme and its members. As a result, the Trustee and its sub-committees have dedicated time at meetings throughout the year to discussing climate change and taking action where necessary.

Following the Department for Work and Pensions (DWP) guidance on stewardship, the Trustee has defined its stewardship priorities, which are the following:

- Climate change
- Business ethics and transparency
- Diversity, equity, and inclusion

These priorities have been communicated to the Scheme's asset managers, to be considered, among other ESG factors, when making investment decisions, engagement, and voting.

The Trustee has responsibility for ensuring effective governance of climate change risks and opportunities in relation to the Scheme. To ensure the proper governance over climate change, the Trustee has the following responsibilities:

- Ensure Trustee Directors have sufficient knowledge and understanding of climate change
- Implement effective climate governance
- Identify and assess climate-related risks and opportunities and add to the Scheme Risk Register
- Incorporate climate-related considerations into strategic decisions for Scheme funding arrangements
- Include climate-related considerations when assessing and monitoring the strength of the sponsoring employer's covenant
- Ensure that the Scheme's professional advisers have clearly defined responsibilities in respect of climate change and assess their performance accordingly
- Communicate with Scheme members and other stakeholders on climate change where appropriate, including public reporting in accordance with:
 - Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021
 - Occupational and Personal Pension Schemes (Disclosure of Information) Regulations 2013

As climate change considerations for investments involve specific knowledge and focused discussions, the Trustee has delegated the following responsibilities to its relevant investment Committees:

DB Investment Committee

This committee is composed of three trustees, with voting rights, and two Company representatives, being one a director from the Pensions Management Group and the UK Asset Manager, without voting rights. This committee has the following responsibilities:

- Determine short, medium, and long-term review periods
- Incorporate climate-related considerations into strategic decisions and investment beliefs relating to DB Section investments
- Ensure that the Scheme's DB investment managers are considering climate-related risks and opportunities in relation to DB Section investments, and have appropriate processes, expertise, and resources to do this effectively
- Select and regularly review climate metrics taking into account advice from its investment consultant

DC Committee

This committee is composed of three trustees, with voting rights, and has the following responsibilities:

- Determine short, medium, and long-term review periods
- Incorporate climate-related considerations into strategic decisions and investment beliefs relating to the DC investments, for both the default investment strategy and the broader self-select fund range
- Ensuring that the DC investment managers are considering climate-related risks and opportunities in relation to the investment funds made available to members, and have appropriate processes, expertise, and resources to do this effectively
- Select and regularly review climate metrics taking into account advice from its investment consultant

These Committees meet at least three times per year and report the relevant decisions to the Trustee Board either via written form or via investment update, which is a fixed session in every Trustee Board meeting.

During 2022, the Trustee and its relevant committees were trained on topics related to climate risk, scenario analysis and climate related metrics. The training was carried out by the Trustee advisors, prior to decisions taken to comply with TCFD requirements.

Other parties' and advisors' roles

In-House Pension Team

Consisting of the Pension Manager, Pension Specialist, Pension Officer and Asset Manager. This team has the following responsibilities:

- Ensure Trustee Directors have sufficient knowledge and understanding of climate change and organise training sessions to cover eventual knowledge gaps
- Implement effective climate governance as defined by the Trustee Board
- Identify and assess climate-related risks and opportunities and add to the Risk Register

To monitor and mitigate conflicts of interest related to the internal team, the Scheme has a Conflicts of Interest policy in place and a register to document conflicts identified. This register is revised regularly by the Trustee.

Actuarial adviser

- Provide training and updates to the Trustee on relevant climate-related matters
- Advise how climate-related risks and opportunities may affect Scheme assumptions and the implications for the Scheme's funding strategy and journey plan

Covenant adviser

- Include climate-related considerations when assessing and monitoring the strength of the sponsoring employer's covenant

Legal adviser

- Provide training and updates to the Trustee on relevant climate-related matters
- Ensure the Trustee is aware of its statutory and fiduciary obligations in relation to climate change and working with the Trustee's other advisers to ensure alignment between these obligations and:
 - Any formulation of investment beliefs in relation to climate change; and
 - the identification and monitoring of climate-related metrics and targets in relation to the Scheme's investments
- Assist (as required) with contractual requirements to be included in arrangements with the investment managers with respect to the governance, management, and reporting of climate-related matters

Investment Managers

- Identify, assess, and manage climate-related risks and opportunities in relation to Scheme investments, in line with arrangements agreed with the Trustee
- Manage the assets in line with the Trustee's climate beliefs where possible. For example, the Investment Management Agreement of the Trustee with Royal London Asset Management Ltd, dated from 4th August 2022, mentions "The Manager may undertake switch transactions that reduce ESG risks, including climate change risk, if it is deemed to be in the best interest of the Portfolio even when taking account of potential reduction in credit spread on the replacement bonds"
- Exercise rights (including voting rights) attached to Scheme investments, and undertake engagement activities in respect of those investments, in relation to climate-related risks and opportunities that seeks to improve long-term financial outcomes for members
- Report on stewardship activities and outcomes in relation to Scheme investments (where feasible)
- Provide information to the Investment Consultants on climate-related metrics, as agreed from time to time, and use its influence with investee companies and other parties to improve the quality and availability of these metrics over time

Investment consultants (DB and DC)

- Advise how climate-related risks and opportunities might affect the funding position of the DB Sections over the short, medium, and long-term, including implications for the investment strategy, long-term objectives, and journey plan
- Advise how climate-related risks and opportunities should be considered as part of the DC default investment strategy review and broader self-select range
- Assist the Trustee to incorporate climate change into governance arrangements, risk register, contingency planning and monitoring framework and communication with stakeholders (including, but not limited to, its TCFD reporting) as appropriate
- Provide training and updates to the Trustee on relevant climate-related matters
- Help the Trustee to formulate investment beliefs in relation to climate change and reflect these in the Scheme investment policies and strategy
- Advise how climate-related risks and opportunities might affect different asset classes in which the Scheme might invest over the short, medium, and long-term, and the implications for the Scheme investment strategy and journey plan
- Advise the Trustee on the appropriateness and effectiveness of the Scheme's investment managers' processes, expertise and resources for the governance and management of climate-related risks and opportunities. For example, in June 2022 the DB investment consultant provided a view on one of the Scheme's asset managers' responsible investment credentials in response to a question from the Investment Committee about potential 'greenwashing'.
- Engage with the investment managers to improve their climate-related integration over time
- Assist the Trustee to incorporate climate change into their investment monitoring
- Undertake scenario analysis which illustrates how the Scheme may be affected under different climate pathways, assisting the Trustee with interpretation and use of the results, and advising on when it might be appropriate to update the analysis
- Assist the Trustee to identify, monitor, and use suitable climate-related metrics and targets in relation to Scheme investments (including liaising with the investment managers regarding the metrics)

The Trustee, with support of the In-House Pension Team and investment consultants, monitor the investment managers with respect to climate-related practices. The investment managers are also invited, on a regular basis, to present to the relevant Committees. Climate risk management practices and credentials are considered when selecting new asset managers and advisors.

The Trustee question and challenge their advisors on relevant climate information and views. For example, the DB Investment Committee queried the suitability of the assumptions used in the Failed Transition scenario during the presentation of climate scenario modelling. The Trustee is reliant on its advisers to ensure that it can identify, assess, and manage climate risks and opportunities. The Trustee sets objectives for its investment consultants, which include activities related to climate monitoring and including climate related considerations in their investment advice. These objectives and performance against them are reviewed on a quarterly basis.

For example, the DB investment consultant objectives include the following:

'Support the Trustee to implement an investment strategy that integrates its policy on ESG (including climate change) and stewardship, including providing appropriate reviews on ESG-related operations of investment funds/managers.'

For the DC investment consultant, the following is an excerpt from the strategic objectives set, highlighting in green font the expectation that climate change considerations will be integrated in the advice:

'The IC Provider should take into account the Overall Objective above and, in doing so, will give due consideration to relevant circumstances of the Scheme. Those circumstances include, but are not limited to, the governance framework, the contribution structure, member engagement levels, the tolerance for investment risk of the Trustee, economic and market conditions and outlook, and ancillary objectives and requirements including the responsibilities of the Trustee to consider environmental, social and governance (ESG) factors (including climate change) and stewardship risks.'

Nature and frequency of monitoring

The Trustee considers a range of different information about the climate change risks and opportunities faced by the Scheme to enable the Trustee to fulfil its responsibilities.

Regular reviews

At one or more meetings each year, the Trustee will review and approve (where appropriate):

- The Scheme's risk register, following review and updates from its advisers
- An update report on the Scheme's climate metrics, following review by its investment consultants
- Its governance arrangements in relation to climate change
- Its draft TCFD reporting
- A draft business plan that outlines the main topics due to be discussed at each Board meeting, including climate-related topics, and the papers expected from advisers in relation to each item
- Whether it is appropriate to carry out scenario analysis that illustrates how the Scheme's assets and liabilities might be affected under various climate change scenarios, in years when this is not required because it has been carried out within the previous two years
- The advisers' credentials, competence, and performance against their climate related objectives. The Trustee will explicitly consider climate change in the annual review of all advisers (including Scheme Actuary and covenant adviser) and will consider the Investment Consultants Sustainability Working Group (ICSWG)'s guide on assessing the climate competency of investment consultants

At one or more meetings each year, the DB Investment Committee and DC Committee will review and approve (where appropriate):

- Updates on Scheme investments from the investment consultants
- The agreed SIP, including the aspects relating to climate change
- A responsible investment report from the investment consultants that reviews the Scheme's investment managers in relation to ESG factors and climate change. In some instances, this reporting will be integrated within other investment governance reports such as quarterly investment reports.
- Data on ESG metrics for the Scheme's investments, including the required climate-related metrics under TCFD reporting regulations, and performance against any targets set in relation to these metrics
- Whether to retain or replace any targets set in relation to these metrics.

Less frequent reviews

The Trustee, with support from the Committees, will consider climate-related risks and opportunities whenever the following activities are undertaken:

- Actuarial valuation of the Scheme (latest valuation: 31 December 2020)
- Review investment strategy and update the SIP (DB SIP: Q4 2022, DC SIP: Q2 2023)
- Assessment of the sponsoring employer's covenant (latest assessment: Q4 2022)
- Triennial review of the DC default investment strategy and self-select fund range (last review: 2022)

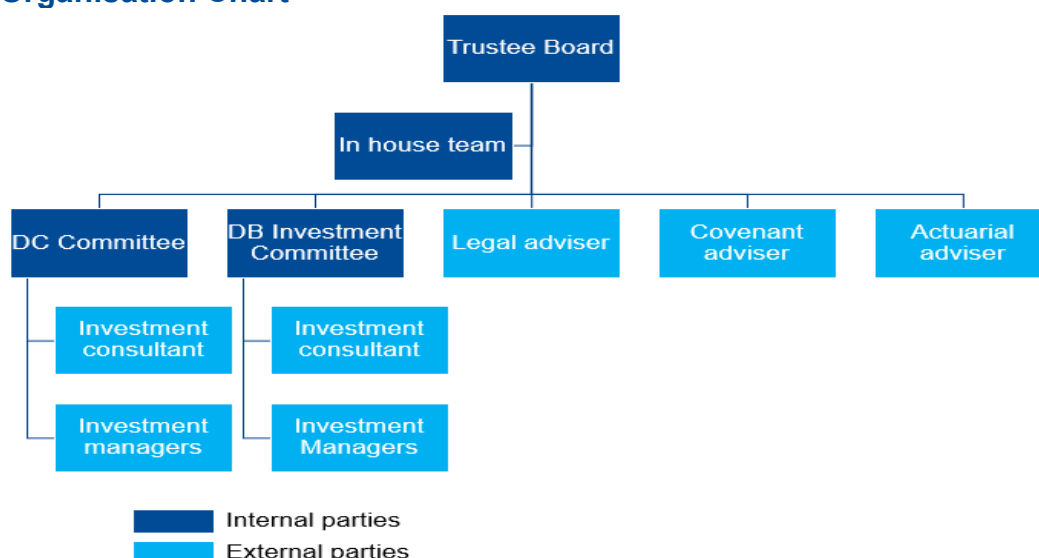
The Trustee will also, at least every three years, and following any major changes in the Scheme's position (buy-in, employer acquisitions, sales, etc.), review:

- Its choice of short, medium, and long-term time periods to be used when identifying climate-related risks and opportunities
- The results of scenario analysis that illustrates how Scheme assets and liabilities might be affected under various climate change scenarios, along with commentary on the potential impacts for the sponsoring employers and the implications of Scheme funding and investment strategies

The DB Investment Committee and DC Committee will, at least every three years, review their choice of climate-related metrics to inform the Trustee's identification, assessment and management of climate-related risks and opportunities.

Whenever reviewing agreements with external advisers, or appointing new advisers, the Trustee will consider and document the extent to which the advisers' climate-related responsibilities are included in the agreements and/or any adviser objectives set.

Organisation Chart



Strategy – Identification & assessment of climate-related risks & opportunities

Time horizons

The Trustee has defined the time horizons mentioned in the table below when considering climate related risks and opportunities for the Scheme. Although having three separate DB Sections in the Scheme, the Trustee considers them to be similar in governance and climate reporting. Therefore, the same time horizons were considered for the DB Sections.

Time horizon	Period	Rationale
Short term all sections	4 years	DB: period over which the Group Section is targeting to be fully funded on a gilts+0.25% per annum basis DC: broadly aligned with the strategy review cycle, and consistent with the DB period
Medium term all sections	9 years	DB: period over which the BPP and Chemetall Sections are targeting to be fully funded on a gilts+0.25% per annum basis DC: Broadly reflects the pre-retirement period during which members are eligible to take DC benefits
Long term DB section	15 years	Approximate duration of aggregate DB liabilities
Long term DC section	20 years	Reflecting the younger profile of the DC membership

The Trustee believes that climate-related risks and opportunities arise from physical effects of climate change, and from the effects of transitioning to a lower carbon economy. Many of these climate-related risks could affect the value of the Scheme's assets, deteriorating the funding position for the DB Sections and leading to delays in reaching self-sufficiency or need for additional contributions from the sponsor. Some may affect the DB section's liabilities, due to changes in members' life expectancy or the inflationary increases made to pensions. The sponsor's financials could also be affected, impacting its ability to support the Scheme, if needed. DC members' investment returns and hence their outcomes at retirement could also be affected.

Looking for the opportunities, the Trustee identified that investing into ESG tilted funds in certain asset classes may lead to more attractive risk-adjusted returns in the future, since the invested companies are already developing plans to operate in a low-carbon emissions environment, and they might be more resilient in a scenario of climate change. On the credit side, companies with good climate-related practices may be more resilient and have lower default risk. The Scheme does not invest directly in real estate or infrastructure, which could be directly exposed to physical risks.

More detail on some of the risks and opportunities relevant to the Scheme is set out below:

DB Sections	Key risks	Key opportunities
Short term	Exposure to climate-related investment risks may be highest while there is an allocation to growth assets, but there is exposure via all of the assets. Investment managers may have insufficient expertise to make climate-informed decisions. This could in turn reduce the funding level. The Trustee has taken steps to mitigate these risks, as specified below.	Aligning Chemetall's equity and credit mandates with the BPP Section's climate-aware approach to protect against transition risks and provide transition opportunities. Preparing the Group Section to consider an insurance transaction to protect members' benefits from climate (and other) risks. Considering new investments that might benefit from the climate transition and increase stability of potential outcomes.
Medium term	Market volatility, regulatory risks and sector specific climate impacts could cause investment losses and increase time to reach full funding. The low allocation to growth assets of the largest DB Sections and the climate tilting of DB assets where possible may mitigate climate-related risks.	Ensure credit (including ABS) mandates are suitably mitigating climate risks. Preparing the BPP and Chemetall Sections to consider an insurance transaction to protect members' benefits from climate (and other) risks.
Long term	Cost of any potential transactions may increase as insurers allow for climate risks in their pricing and reserving. This could cause longer reliance on the covenant. Shocks to life expectancy, gilt yields and inflation could impact the funding level.	A full third-party / insurance transaction would be expected to provide protection from climate (and other investment, funding, and covenant) risks for members' benefits.
DC Sections	Key risks & opportunities	
Short term	Over this period, transition risk dominates. A Rapid Transition has the biggest impact. In this scenario there is a "shock" to investment returns, driven by the economic cost of having to move faster on a transition to a lower carbon world). The analysis assisted the Trustee in identifying the impact of the ESG-tilted funds the Scheme has implemented. For example, in the Adventurous Fund the shock to returns would have been around one-tenth higher without these tilts. The Failed Transition scenario was assessed as being marginally positive in the short term, due to transition costs not materialising.	
Medium term	Transition risks are still significant and therefore a Rapid Transition is most impactful. However, a Failed Transition starts to have a more negative impact, as future physical damage is priced into investment markets. The impact of the Orderly Transition scenario was generally smaller, given that transition costs are smaller and are likely to be already priced into an extent.	
Long term	As longer-term physical damages begin to be priced in, a Failed Transition becomes the most impactful scenario. Such a scenario causes the largest estimated reduction in annualised return (c1.8% p.a.) for the Adventurous Fund, driven by the fact that it invests only in global equities and has greater exposure to sectors likely to be negatively impacted by a failed transition.	

The analysis has led to the following findings and actions being taken forward in respect of the DC Section:

1. Over the long term, a successful transition is imperative: a successful transition leads to enhanced projected returns when compared to scenarios associated with higher temperature outcomes. This is largely driven by lower physical damages.
2. Sustainable allocations can protect against transition risks: this reinforces the steps the Trustee has taken to integrate consideration of climate risk and opportunity management in the DC investment arrangements. The Trustee will continue to seek opportunities to further enhance this, taking into account overall risk and return considerations and suitability for the Scheme's membership profile.
3. Sector exposure is key: differences in return impact are most visible at an industry-sector level, with significant divergence between scenarios. Oil and gas, certain utilities, and renewable energy sectors are most impacted by the transition. This forms a useful discussion point for the DC Committee when meeting with investment managers.
4. Awareness of future shocks: As markets react to new information because of the changing physical environment and government policies, investors will be vulnerable to short, sharp shocks. The analysis has assisted the Trustee in exploring the potential impact that repricing events can have on the DC investments.

Review of sponsor's exposure to climate risk and opportunities

This review was prepared based on BASF's published reports and discussions between the In-House Team with the dedicated team within BASF Corporate Centre.

BASF has climate change as an important part of its corporate strategy. As a leading chemical company, BASF wants to reduce total greenhouse gas emissions from its production sites and energy purchases by 25% by 2030 compared with 2018. By 2050, BASF aims to achieve net zero emissions from its production sites and energy purchases. To achieve its climate protection targets, BASF plans to invest up to €1 billion by 2025. Additional investments of up to €3 billion are to follow by 2030.

BASF's new organisational structure aims to drive forward the climate protection targets and carbon management activities: The Corporate Strategy and Sustainability unit will continue to develop targets and track global target achievement, while the Net Zero Accelerator unit, which was launched at the beginning of 2022, will focus on accelerating the implementation of existing and new cross-company projects to reduce emissions. Both units report directly to the Chairman of the Board of Executive Directors. This ensures that climate protection-relevant aspects are integrated into strategic decision-making processes as well as into core business activities. In parallel, BASF's operating divisions are working on division-specific projects to reduce emissions, supported by the global service units.

Several innovative processes are being developed to achieve climate-related targets, such as developing methane pyrolysis for large-scale production, eFurnace to reduce process-related CO₂ emissions by utilising renewable energy sources and strengthening the orientation toward circularity.

To monitor climate risks, BASF established climate related policies and guidelines to ensure the Group principles are clearly defined across all subsidiaries. Additionally, BASF is working on an integrated climate risk approach for every country and site within its Group. Transition risks are considered as business related, and therefore each Strategic Business Unit is responsible for assessing climate risk and opportunities, with support from the Corporate Strategy and Sustainability unit. Physical risks are monitored on a production site level, using a physical risk dashboard.

As result of all activities mentioned above, BASF is often recognised as a benchmark within the chemical industry according to leading ESG rating agencies. Specific highlights include integrated sustainability reporting, business ethics and development of sustainable products. The table below summarises the outcome of the respective rating analysis:

Agency	Rating	Last update
CDP	A- (Leader)	December 2021
FTSE4Good	Included in FTSE4Good Index Series (top class among chemical companies)	June 2021
ISS ESG	Prime Status	May 2021
MSCI ESG	A	April 2021
Sustainalytics ESG Risk	28.1 points (top 3 in diversified chemicals)	July 2022
Vigeo Eiris	59 points (average chemical sector: 49)	November 2021

All participating employers of the Scheme are subsidiaries of BASF and follow the same principles and guidelines to monitor climate risks and opportunities. Apart from the company's efforts to monitor climate risks and opportunities, the Trustee monitor annually the sponsor's covenant in view of different aspects, including climate related changes. In the event the covenant deteriorates, the Trustee engages with the sponsor to obtain a suitable solution. The Trustee agreed an underpin with BASF of £83m (until 2031), as an additional security layer in case the sponsor faces financial distress as consequence of climate changes.

Climate scenario analysis

DB Sections

The Trustee carried out a climate scenario analysis using assets and liabilities at 30 September 2021, with the support of the DB investment consultant. To understand the level of financial risk, the Trustee looked at a set of three climate scenarios to calculate the eventual financial impact on its investments. These scenarios consist of various assumptions (details on modelling approach and limitations in Appendix 2):

Scenario	Summary of assumptions
Orderly Transition	Average global warming stabilises at around 1.5°C above pre-industrial levels. Paris agreement goals are met, moderate physical impacts and global GDP lower than the climate-uninformed scenario in 2100.
Disorderly Transition	Average global warming stabilises at around 1.5°C above pre-industrial levels. Paris agreement goals are met, moderate physical impacts, but global GDP is slightly worse than in orderly transition due to impacts of financial markets volatility.
Failed Transition	Average global warming is about 2°C by 2050 and 4°C by 2100, compared to pre-industrial levels. Carbon emissions continue at current levels, and this results in severe physical impacts and changes in the global climate that disrupt economic activity.

The Trustee acknowledges that many alternative plausible scenarios exist but found these were a helpful set of scenarios to explore how climate change might affect the Scheme in future.

The intricacies of climate systems present considerable difficulties in modelling the impacts on assets and liabilities. This is particularly true in the Failed Transition scenario where over 4°C of warming is observed. Due to the unprecedented nature of such warming, it is challenging to encompass all potential consequences within the modelling process. Simplifications in modelling, such as not allowing for tipping points, mean the actual impact on schemes is likely to be more significant than is currently being modelled. The Trustee has considered the potential impact of such limitations in the modelling and is comfortable that, provided these limitations are understood, the scenarios still provide valuable insights to inform climate risk assessment and management.

To provide further insight, the Trustee also compared the outputs under each scenario to a "climate uninformed base case", that makes no allowance for either changing physical or transition risks in future.

The long-term journey plan target was achieving full funding on a gilts-flat liability basis, when the climate scenario analysis was completed, the financial impact for each section based on its strategy at the time (or proposed strategy for the Chemetall Section) can be summarised as follows:

Section	Scenario	Impact on gilts-flat funding position by 2025	Projected date for being fully funded
BPP	Orderly transition	£4m	2028
	Disorderly transition	£38m	2028
	Failed transition	£0m	2028
Group	Orderly transition	£1m	2023
	Disorderly transition	£19m	2023
	Failed transition	£0m	2023
Chemetall	Orderly transition	£1m	2030
	Disorderly transition	£3m	2031
	Failed transition	£0m	2030

The results show that, if the objectives of the Paris Climate Agreement are to be achieved, significant transitions are required in the short and medium term.

Under the failed transition scenario, it is assumed that there are not large-scale transitions to mitigate climate change and as a direct result there are not any large-scale transition risks modelled in this scenario. Therefore, over the short term (in this case the period until 2025) the failed transition scenario and the base case scenario look broadly similar – as neither assumes any significant transition.

Over the longer term, and particularly beyond the time horizon modelled, the failed transition scenario is the most impacted by the physical risks as they have not been mitigated. The impact of such physical risks is not projected over the periods covered by this report because the Sections are aiming to be fully funded/insured before physical risks under a failed transition scenario are modelled to begin to impact assets and liabilities.

Given under all scenarios modelled, each DB Section still achieved full funding within their respective target short/medium-term timeframes, this leads the Trustee to consider the DB Sections' investment and funding strategies are suitably resilient to climate change over the medium term (acknowledging there is always some climate risk exposure).

DC Sections

For calculation of financial risk, the Trustee considered plausible future scenarios, over periods up to 40 years, though focused on the agreed time horizons as outlined earlier. Over shorter timeframes, transition risk (for example, arising from policy changes and technology developments) tends to dominate while over longer timeframes physical risk (for example, extreme weather events and chronic damage) is expected to be the key driver of climate impacts. The scenarios considered are summarised below (details on modelling approach and limitations Appendix 2):

Scenario	Summary of assumptions
Rapid Transition	Average temperature increase of 1.5°C by 2100, in line with the Paris Agreement. This drives sudden downward re-pricing of multiple securities by 2026. To a degree, the shock is sentiment driven and is therefore followed by a partial market recovery. Physical damages are most limited under this scenario.
Orderly Transition	Average temperature increase of less than 2.0°C by 2100. Transition impacts do still occur but are relatively muted across the broad market.
Failed Transition	Average temperature increase above 4°C by 2100. Physical climate causes large reductions in economic productivity and increasingly negative impacts from extreme weather events.

The Trustee has considered scenario analysis for “popular arrangements”. Such arrangements are funds / strategies in which £100m or more are invested, or which accounts for 10% or more of assets used to provide money purchase benefits (excluding assets which are solely attributable to Additional Voluntary Contributions). The Scheme’s popular arrangements are:

- **Moderate Fund:** The “growth” phase of the default investment strategy and is also available as a FreePlan (self-select) option. It invests in global developed and emerging markets equities and in diversified growth funds (DGFs). A portion of the Fund is invested in sustainably themed equities. In January 2023, implemented DGFs that integrate greater consideration of ESG issues, including climate change, within the portfolio.
- **Adventurous Fund:** A FreePlan (self-select) fund choice which invests in developed and emerging markets equities across the globe. A portion of the Fund (approximately 27%) is invested in sustainably themed global equities.
- **Cautious Fund:** Used in the de-risking phase of the default strategy and is available as a FreePlan option. It invests in global developed and emerging markets equities, DGFs, and bonds. A portion of the Fund is invested in sustainably themed equities. In January 2023, implemented DGFs that integrate greater consideration of ESG issues, including climate change, within the portfolio.
- **Pre-Retirement Annuity Fund:** Historically formed part of the de-risking phase of the default investment strategy, before the Scheme moved to a drawdown targeted default in 2018. The Fund is available as a FreePlan option. It invests in sterling corporate bonds and UK Government bonds. Sustainable “tilts” are in place within the corporate bond portion of the fund.
- **Default lifestyle strategy:** The default investment arrangement using a “lifestyle” de-risking approach.

At an investment market level, there is academic evidence to suggest that transition risks are “priced in” to markets, but long-term physical risks are more likely to be mispriced. This uncertainty is considered by looking at scenarios relative to a “climate aware” baseline. As consequence, the scenario analysis’ shows the return in terms of how they are different to what is assumed in the analysis to be “priced in”. The table below shows the results as reduction in annualised returns that may arise under each scenario, relative to a baseline:

Fund	Scenario	Short-term (4 years)	Medium-term (9 years)	Long-term (20 years)
Moderate	Rapid transition	-2.5% p.a.	-0.8% p.a.	-0.3% p.a.
	Orderly transition	-0.5% p.a.	-0.2% p.a.	-0.1% p.a.
	Failed transition	0.8% p.a.	-0.3% p.a.	-1.2% p.a.
Adventurous	Rapid transition	-3.0% p.a.	-0.9% p.a.	-0.3% p.a.
	Orderly transition	-0.7% p.a.	-0.2% p.a.	-0.1% p.a.
	Failed transition	1.0% p.a.	-0.5% p.a.	-1.8% p.a.
Cautious	Rapid transition	-1.9% p.a.	-0.6% p.a.	-0.2% p.a.
	Orderly transition	-0.4% p.a.	-0.1% p.a.	0.0% p.a.
	Failed transition	0.6% p.a.	-0.2% p.a.	-0.8% p.a.
Pre-retirement	Rapid transition	-0.9% p.a.	-0.2% p.a.	-0.1% p.a.
	Orderly transition	-0.1% p.a.	0.0% p.a.	0.0% p.a.
	Failed transition	0.2% p.a.	0.0% p.a.	-0.1% p.a.
Default Lifestyle strategy	Rapid transition	-2.5% p.a.	-0.8% p.a.	-0.3% p.a.
	Orderly transition	-0.5% p.a.	-0.2% p.a.	-0.1% p.a.
	Failed transition	0.8% p.a.	-0.3% p.a.	-1.2% p.a.

Risk Management

Processes for identifying and assessing climate-related risks

The Trustee has identified, assessed, and managed climate-related risks and opportunities to the Scheme through discussions with its advisers, and by performing the following tasks:

- Attending climate change training to understand how climate-related risks might affect pension schemes and their investments.
- Commissioning scenario analysis to understand how assets and liabilities might be affected and getting advice on the implications for the investment strategy and journey plan.
- Analysing how the sponsor might be affected by climate-related factors, and the implications for its ability to provide financial support for the Scheme.
- Reviewing its investment managers' climate practices, including how they incorporate climate-related factors into their investment process and how effectively they manage climate-related risks.
- Monitoring a range of climate-related metrics in relation to the Scheme's assets.
- In addition, the Trustee expects its investment managers to identify, assess and manage climate-related risks to the Scheme's assets on a day-to-day basis. It discusses climate change when it meets managers, to increase its understanding of the Scheme's climate-related risks and test the adequacy of the steps being taken to manage them.
- The SIP sets out how investment climate-related risks are managed and monitored.
- Communicating the Trustee's stewardship priorities to the investment managers and assessing their stewardship actions related to these priorities (including climate change).
- Integrating climate change into the risk management processes, such as risk register, covenant monitoring, investment performance reporting, and Integrated Risk Management (IRM) dashboard. These documents are revised for each Trustee Board meeting, which ensures that climate risk is regularly considered by the Trustee and their advisers.
- Annual review of DC value for members includes consideration of how effective the investment managers are in their integration of ESG factors, including climate change. This assists the Trustee in identifying any risks in this area.
- Considering climate when selecting new investment managers and encouraging the current managers to manage climate risks to the assets.

In addition, the advisors will take climate-related risks and opportunities into account as part of the wider strategic investment advice provided to the Trustee. This includes highlighting the expected change in climate-risk exposure through proposed asset allocation changes, both from the top-down level (via climate scenario analysis) and bottom-up (via climate-related metrics).

Tools used to identify, assess, and manage climate risks and opportunities

The Trustee assessed the risks and opportunities it had identified using the following tools:

- Climate scenario analysis
- Investment manager reports and meetings with their Responsible Investment teams
- Climate-related metrics
- Training session provided by its advisers

Review of investment managers' climate practice

The process for selection of investment managers differs between the DB and DC Sections. Within the DB Section, the Trustee appoints investment managers directly. Within the DC Section, the Trustee does not contract with investment managers, but instead uses an investment platform to access pooled funds.

The Trustee, supported by the In-House Team, has reviewed its appointed asset managers' climate practices for investment decisions and engagement with investees. This review was done via calls with each manager's Responsible Investment team and by researching their publicly available climate-related policies and reports. To consolidate the results of these interactions and to be able to comprehensively compare the approach, the following aspects were considered:

- If the manager has a commitment to net-zero targets and if it is a signatory to ESG related initiatives
- The manager's Strategy and Governance rating under the United Nations Principles for Responsible Investment (UNPRI)
- If the manager has Responsible Investment (RI) committees and climate policies in place
- If the manager utilises ESG scoring and/or ESG as criteria for investment decisions
- If the manager monitors emission metrics in the portfolios invested by the Scheme

At the time the climate practices were reviewed for the DB and DC Sections, the main conclusions were:

- All managers have good RI governance and integrate ESG considerations in the investment process. In the case of index-tracking (passive) funds this is typically via voting and engagement activity.
- Carbon data is mainly available for publicly owned companies. Therefore, funds that invest in credit and alternative assets may obtain data via the asset manager's proprietary research or third-party estimations (CDP).
- ESG scoring mainly uses proprietary methodologies as there is no standard approach in the market.
- Carbon metrics adopted mainly consist of Weighted Average Carbon Intensity (WACI), Carbon footprint and Absolute GHG emissions.
- All managers use voting as a tool to improve ESG practices in invested companies.

In addition, the Trustee receives a voting and engagement activity summary on an annual basis as part of the preparation of the Scheme's Implementation Statement. The statement summarises how the investment managers vote and engage on climate-related issues (among the other key engagement priorities as detailed within the Governance Section of this report). The statement is available on the [Pension Website](#).

As part of any future manager appointments or as a factor when considering the termination of a manager's appointment, the Trustee, with advice from its Investment Consultant, will consider an investment manager's approach to managing climate-related risks and opportunities.

DB Sections

The investment strategy and mandates were set whilst considering climate-related risks and opportunities. For example, the Trustee instructed the managers of the BPP and Group Sections segregated buy & maintain credit mandates to target lower emissions by limiting investment into unconventional fossil fuel extraction or thermal coal companies, and introducing investment terms that would expect the portfolio to reduce the average carbon footprint over time. The Chemetall Section invests in a climate-tilted equity fund, which seeks to underweight exposure to companies that have relatively higher carbon emissions, and the Trustee monitors the fund's emissions quarterly vs. a standard equity index. Further, the Trustee regularly questions the investment managers on their climate credentials and investment integration to ensure that climate risks and opportunities are being considered appropriately.

The table below summarises the main aspects that were discussed with the asset managers:

	Barings	ICG	RLAM	Insight	LGIM
100% net-zero targets	2050	2040	2040	2050	2050
Signatory of ESG initiatives	UNPRI UNGC	UNPRI ICI UK	UNPRI	UNPRI UNGC	UNPRI UNGC
PRI Strategy and Governance	A+	A+	A+	A+	A+
Climate Policies	No	No	Yes	No	Yes
ESG scoring	No	No	Yes	No	Yes
RI committee	Yes	No	No	Yes	Yes
Metrics monitored*	No	WACI, CO2, GHG	WACI, CO2	WACI, CO2, GHG	WACI, CO2, Green revenues
ESG as criteria	Yes	Yes	Yes	Yes	Yes

*Specifically for the funds used by the Scheme

The Trustee will regularly review its asset managers' climate practices to ensure they are considering climate-related risks and the Trustee's stewardship priorities in their investment decision process and when engaging with investees. Additionally, the Trustee monitor regularly, with support from the research team of its investment consultants, the RI practices of its managers. The Trustee will engage with investment managers to improve practices where necessary and would be prepared to disinvest if the manager did not improve sufficiently.

Based on the review of the climate practices, The Trustee is comfortable with the investment managers' credentials and approaches and does not intend to make any changes as a result of its review.

DC Section

The Scheme's DC investment funds are accessed via an investment platform arrangement held via a policy of assurance issued to the Trustee by Scottish Widows Limited. The Trustee therefore does not contract directly with the asset managers to the DC Section but instead selects which funds to make available via the Scottish Widows Limited platform. At the time of this review, the selected managers were:

Abrdn plc (**Abrdn**)
Allspring Global Investments (**Allspring**)
Baillie Gifford & Co (**Baillie Gifford**)

BlackRock Asset Management (**BlackRock**)
HSBC Global Asset Management (**HSBC**)
Legal & General Investment Management (**LGIM**)

The table below summarises the main findings:

	Abrdn	Allspring	Baillie Gifford	BlackRock	HSBC	LGIM
Operational net-zero targets	2040	Not currently	2040	2050	2030	2030 (50%)
100% net-zero targets	2050	Not currently	2050	2050	2050	2050
Signatory of ESG initiatives	UNPRI UNGC	UNPRI UNGC	UNPRI UNGC	UNPRI UNGC	UNPRI UNGC	UNPRI UNGC
PRI Strategy and Governance	A+	A+	A+	A+	A	A+
Climate Policies	Yes	Yes	Yes	Yes	Yes	Yes
ESG scoring	Yes	Yes	No	Yes	Yes	Yes
RI committee	Yes	Voting & Engagement Governance Committee only	Yes	Yes	Yes	Yes
Metrics monitored* (not exhaustive)	WACI CO2 GHG Others	WACI CO2	WACI CO2 GHG SASB materiality map**	WACI CO2	WACI CO2 GHG	WACI CO2 Green revenues
ESG as criteria	Yes	Yes	Yes	No (passive funds)	No (passive fund)	Yes

*Specifically for the funds used by the Scheme.

**Covers carbon metrics plus others including air quality, waste and wastewater management, ecological impacts.

Based on the review of the climate practices, the Trustee is comfortable with the investment managers' credentials and approaches and does not intend to make any changes as a result of its review. The DC Committee is engaging with Allspring on the topic of net zero

Metrics

The Trustee has chosen four climate-related metrics to help it monitor climate-related risks and opportunities to the Scheme. These are listed below and reported for the DB and DC sections (as far as the Trustee was able to obtain the data).

Metrics	High-level methodology
Absolute emissions: Total greenhouse gas emissions	The sum of each company's most recent reported or estimated greenhouse gas emissions attributable to the Scheme's investment in the company, where data is available. Emissions are attributed across equity and debt investors in proportion to the value of their investment in the company. Reported in tonnes of CO2 equivalent. This methodology was chosen because it is in line with the statutory guidance.
Emissions intensity: Carbon footprint	The total greenhouse gas emissions described above, divided by the value of the invested portfolio in £m. Reported in tonnes of CO2 equivalent per £1m invested. This methodology was chosen because it is in line with the statutory guidance.
Portfolio alignment: Science-based targets (SBT)	The proportion of the portfolio by weight of holdings with science-based targets to reduce their greenhouse gas emissions, demonstrated by a target validated by the Science Based Targets initiative (SBTi) or equivalent. This measures the extent to which the Scheme's investments are aligned to the Paris Agreement goal of limiting global average temperature rises to 1.5°C. Reported in percentage terms. The Trustee chose this "binary target" measure because it is the simplest and most robust of the various portfolio alignment metrics available.
Additional climate change metric: Data coverage	The proportion of the portfolio for which greenhouse gas emissions data is provided, either via reports by invested companies or via proxy estimates by the investment managers. Even though the statutory guidance mentions Data Quality and not Data Coverage, the Trustee decided to consider the latter as a metric because it is more comprehensive to monitor and steer via engagement with its investment managers.

DB Sections

The climate-related metrics have been calculated using portfolio holdings at 31 December 2022. The metrics used were provided by the asset managers for each portfolio, available on 31 December 2022.

Metrics collected (Group Section)		Scope 1 and 2 emissions			Portfolio alignment
Asset manager, asset class and valuation (£m)		Coverage	Total GHG emissions (tCO ₂ e)	Carbon footprint (tCO ₂ e/£m)	Proportion with SBT (%)
Insight LDI	106.3	100.0%	20,760	195.3	100.0%
Insight ABS	107.7	0.0%	-	-	-
Insight B&M credit	88.0	62.0%	1,850	33.9	39.9%
RLAM B&M credit	99.3	87.2%	3,897	45.0	15.3%
Barings Private Credit	41.4	0.0%	-	-	-
Cash	6.0	0.0%	-	-	-

In 2022, Insight did not have metrics available for the High-Grade ABS fund (in which assets are invested as part of the collateral waterfall framework). The Trustee has engaged with the manager to develop a plan to improve coverage. Insight plans to utilise external data providers to obtain metrics data and coverage could potentially increase by 30% in 2023. Total emissions may increase when more data becomes available.

Barings does not provide data coverage for funds where assets are invested. These funds are in 'run-off' and the manager is focusing its efforts on improving data coverage for the new ventures. The Trustee agrees there are no reasonable mitigating actions which could be taken for this portfolio until it runs-off completely (expected by 2026) but will continue to request data and encourage Barings to improve its reporting for current investors.

Metrics collected (BPP Section)		Scope 1 and 2 emissions			Portfolio alignment
Asset manager, asset class and valuation (£m)		Coverage	Total GHG emissions (tCO ₂ e)	Carbon footprint (tCO ₂ e/£m)	Proportion with SBT (%)
Insight LDI	225.8	100.0%	44,099	195.3	100.0%
Insight ABS	111.3	0.0%	-	-	-
Insight B&M credit	149.5	72.0%	2,347	21.8	50.5%
RLAM B&M credit	146.0	87.0%	4,916	38.7	18.5%
Barings Private Credit	45.3	0.0%	-	-	-
ICG Private Credit (SDP3C fund)	37.0	0.0%	-	-	-
ICG Private Credit (SDP4C fund)	10.0	100.0%	241	24.8	100%
Cash	10.7	0.0%	-	-	-

The comments related to coverage for High-Grade ABS portfolio and Private Credit with Barings are the same as mentioned above for the Group Section.

For the Private Credit investments with ICG, the manager does not provide data coverage for its SDP3 funds, but it does for the SDP4 fund, where approximately £10m of assets invested. The Trustee will continue to encourage ICG to provide data for the SDP3 fund but has agreed that no reasonable further mitigating actions are available to improve ICG's reporting until it runs-off completely (expected by 2024).

Metrics collected (Chemetail Section)		Scope 1 and 2 emissions			Portfolio alignment
Asset manager, asset class and valuation (£m)		Coverage	Total GHG emissions (tCO ₂ e)	Carbon footprint (tCO ₂ e/£m)	Proportion with SBT (%)
LGIM equity	13.1	99.0%	1,167	90.1	59.7%
Insight LDI nominal	5.2	100.0%	1,016	195.3	100.0%
Insight LDI real	5.4	100.0%	1,055	195.3	100.0%
Insight ABS	2.5	0.0%	-	-	-
Insight B&M credit	1.5	71.0%	19	18.1	32.8%
Cash	1.3	0.0%	-	-	-

The Chemetail Section invests in pooled funds, where there is less autonomy to decide on specific holdings. However, all funds utilised were selected with support from the investment consultant, considering climate practices in its advice.

With exception of the High-grade ABS fund (previously mentioned for the other sections), all funds can already provide higher levels of data coverage.

DC Section

Climate-related metrics provided by the DC investment consultant, Mercer, have been sourced from the investment managers and aggregated through modelling and calculations completed by Mercer. Only Scope 1 and 2 emissions data has been included in this report except where noted. This means that for some companies the assessment of their carbon footprint could be considered an understatement.

The climate-related metrics have been calculated using portfolio holdings and metrics on 31 December 2021 and 31 December 2022 for the Scheme's popular arrangements. The year-on-year percentage change of the climate metrics is detailed in the following tables and have been colour-coded as follows:

	The change in the climate metric is positive. This would apply to a decrease in total emissions, carbon footprint, sovereign carbon intensity, or implied temperature rise. It would also apply to an increase in coverage or share of companies with approved SBTi targets.
	The change in the climate metric is negative. This would apply to an increase in total emissions, carbon footprint, sovereign carbon intensity, or implied temperature rise. It would also apply to a decrease in coverage or share of companies with approved SBTi targets.
	The climate metric is unchanged.
	Climate metrics are unavailable. This includes metrics which are not applicable due to the type of the mandate (e.g., sovereign carbon intensity is only available with sovereign bond exposures), or because the manager is unable to provide the metric although it theoretically applies to the mandate.

The Trustee has observed the following:

- Total greenhouse gas (GHG) emissions decreased on five popular arrangements and increased on two. The percentage changes are noted in the table to illustrate the direction of travel. However, it should be noted that total GHG emissions are a function of a popular arrangement's carbon footprint and its asset size. Changes in asset values between the reporting dates account for a lot of the movement seen on this metric.
- Four popular arrangements increased their carbon footprint between the reporting dates and three mandates decreased their carbon footprint. The Pre-Retirement Annuity Fund saw its carbon footprint decrease the most between the reporting dates. The greatest increase was seen on the Sterling Liquidity Fund. It should be noted despite this increase, that the Sterling Liquidity Fund maintains the lowest carbon footprint of all popular arrangements.
- Portfolio alignment metrics are not available for some popular arrangements as indicated, however there is better availability at 31 December 2022 compared to 31 December 2021. The Trustee welcomes the improvement in coverage.
- Where portfolio alignment metrics are available, the direction of travel is generally positive. For example, the implied temperature rise has decreased between the two reporting dates where this metric is available. The proportion of underlying companies with approved SBTi targets has increased for mandates with data availability, except the HSBC Islamic fund which has not changed between the reporting dates.

Popular Arrangement	Year	Scope 1 and 2 emissions					Portfolio alignment
		Total GHG emissions and carbon footprint coverage	Total GHG emissions (tCO ₂ e)	Carbon footprint (tCO ₂ e/\$m)	Sovereign Carbon Intensity Coverage	Sovereign Carbon Intensity (tCO ₂ e/\$m PPP Adjusted GDP)	Proportion with SBTi approved targets
Moderate	2021	78.6%	9,240.5	72.4			9.4
	2022	78.6%	6,795.1	71.2			30.8
	Change	0.0%	-26.5%	1.7%			225.8%
Adventurous	2021	90.2%	6,864.5	65.6			5.5%
	2022	91.0%	5,728.1	66.8			35.2%
	Change	0.9%	-16.6%	1.8%			539.7%
Cautious	2021	78.6%	739.5	50.4	100.0%	180.0	9.5%
	2022	78.6%	593.0	49.3	100.0%	148.2	30.9%
	Change	0.0%	-19.8%	-2.1%	0.0%	-17.7%	225.9%
Pre-Retirement Annuity	2021	69.8%	3,688.6	75.8			
	2022	74.7%	1,717.1	54.7			32.1%
	Change	7.0%	-53.4%	-27.8%			
Sterling Liquidity	2021	44.0%	99.6	5.8			
	2022	39.6%	166.6	9.3			6.0%
	Change	-10.0%	67.3%	60.3%			
Ethical	2021	98.8%	598.9	45.0			
	2022	98.1%	576.9	52.1			61.6%
	Change	-0.6%	3.7%	15.8%			
HSBC Islamic	2021	99.4%	305.2	19.2			65.0%
	2022	99.9%	312.5	26.9			65.0%
	Change	0.5%	2.4%	39.9%			0.0%

Source: Investment Managers as at 31 December 2021 and 31 December 2022.

Please note: The coverage figures indicate the share of the eligible popular arrangement for which the relevant metric is available. Absolute carbon emissions have been calculated as the product of the specific carbon footprint of the underlying fund(s), their investment value. For mixed asset mandates absolute emissions have been adjusted for the eligibility ratio of the underlying fund(s). For any funds with underlying mandates managed by Legal & General, total carbon emissions and carbon footprint figures include sovereign bond exposures.

Targets

DB Sections

As the asset market is still developing best practices on collecting, estimating, and reporting climate-related metrics. Therefore, the Trustee has decided that the most appropriate target for the DB sections would be Data Coverage. This way, the Trustee can work with the asset managers to develop improved coverage in the Scheme's portfolios and can subsequently focus on improving emission metrics and change the target in the future.

	Section	Current level	Target
Data Coverage target	Group	55%	64%
	BPP	64%	70%
	Chemetall	85%	90%

For Group and BPP, the targets were defined by considering that Private Credit (without any coverage is running down over time) and assuming that Insight ABS fund will provide approx. 30% data coverage after procuring external data providers. During 2023, the Trustee will engage with Insight to ensure that the manager has a solid plan to improve data coverage for the ABS fund. The Trustee will also engage with the other managers and other mandates to understand what plans they have in place to improve their data coverage.

For CHM, the improvement in Data Coverage from the Insight ABS fund will be less significant due to the lower proportional allocation to this fund. Additionally, the expected reduction of allocation to equities will offset part of the Data Coverage improvement from the ABS fund.

DC Sections

The DC section has a higher asset allocation to equities (versus the DB Sections), resulting in higher levels of data coverage. Therefore, setting a data coverage target is not as ambitious as doing so for the DB sections. Having this in mind, the Trustee has set a net zero greenhouse gas emissions by 2050 target for the DC Section (covering listed holdings where data is reported). The rationale is that this target is required to reduce GHG emissions and keep global warming to 1.5°C, meeting the goals of the Paris Climate Agreement. Additionally, all DC investment managers are committed to net zero by 2050 and have signed up to this initiative. Therefore, the funds invested for the DC section are expected to get to net zero and the Trustee can objectively follow up against this objective with their managers.

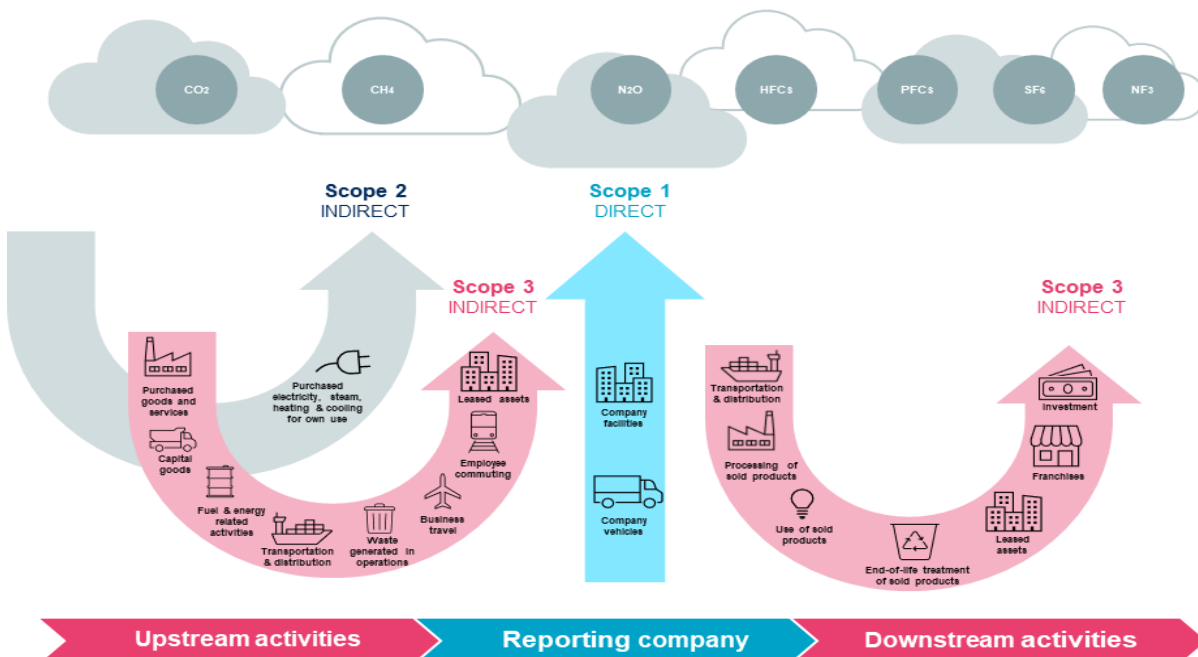
In order to monitor progress towards this longer-term target, the Trustee will work towards an interim target of having, by 2030, at least 50% of relevant assets aligned to a net zero by 2050 target – i.e., credible plans in place to reach the 2050 target. The baseline is 31 December 2021 and progress will be assessed on this basis.

Appendix 1 – Greenhouse gas emissions explained

Within the ‘metrics and targets’ section of the report, the emissions metrics relate to seven greenhouse gases – carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). The figures are shown as “CO₂ equivalent” (CO₂e) which is the amount of carbon dioxide that would be equivalent to the excess energy being stored by, and heating, the earth due to the presence in the atmosphere of these seven greenhouse gases.

The metrics related to greenhouse gas emissions are split into the following three categories: Scope 1, 2 and 3. These categories describe how directly the emissions are related to an entity’s operations, with Scope 1 emissions being most directly related to an entity’s everyday activities and Scope 3 referring to indirect emissions in an entity’s value chain. Scope 3 emissions often form the largest share of an entity’s total emissions but are also the ones that the entity has least control over.

- **Scope 1** greenhouse gas emissions are all direct emissions from the activities of an entity or activities under its control.
- **Scope 2** greenhouse gas emissions are indirect emissions from electricity purchased and used by an entity which are created during the production of energy which the entity uses.
- **Scope 3** greenhouse gas emissions are all indirect emissions from activities of the entity, other than scope 2 emissions, which occur from sources that the entity does not directly control.



Source: GHG Protocol

Appendix 2 – Climate scenario analysis: modelling approach and limitations

DB Sections

Modelling approach

The scenario analysis is based on the ClimateMAPS model developed by Ortec Finance and Cambridge Econometrics and was then applied to the Scheme's assets and liabilities by LCP. The three climate scenarios were projected year by year, over the next 40 years. A summary of main assumption can be seen in the table below:

Scenarios	Failed Transition	Orderly Net Zero by 2050	Disorderly Net Zero by 2050
Low carbon policies	Continuation of current low carbon policies and technology trends	Ambitious low carbon policies, high investment in low-carbon technologies and substitution away from fossil fuels to cleaner energy sources and biofuel	
Paris Agreement outcome	Paris Agreement goals not met	Global net zero achieved by 2050; Paris Agreement goals met.	
Global warming	Average global warming is about 2°C by 2050 and 4°C by 2100, compared to pre-industrial levels	Average global warming stabilises at around 1.5°C above pre-industrial levels	
Physical impacts	Severe physical impacts	Moderate physical impacts	
Impact on GDP	Global GDP is significantly lower than the climate-uninformed scenario in 2100. For example, UK GDP in 2100 predicted to be 50% lower than in the climate uninformed scenario.	Global GDP is lower than the climate-uninformed scenario in 2100. For example, UK GDP in 2100 predicted to be about 5% lower than in the climate-uninformed scenario.	In the long term, global GDP is slightly worse than in the Orderly Net Zero scenario due to the impacts of financial markets volatility.
Financial market impacts	Physical risks priced in over the period 2026-2030. A second repricing occurs in the period 2036-2040 as investors factor in the severe physical risks	Transition and physical risks priced in smoothly over the period of 2022-2025	Abrupt repricing of assets causes financial market volatility in 2025

Source: Ortec Finance

ClimateMAPS uses a top-down approach that consistently models climate impacts on both assets and liabilities, enabling the resilience of the DB Section's funding strategy to be considered. The model output is supported by in-depth narratives that bring the scenarios to life to help the Trustee understanding of climate-related risks and opportunities.

ClimateMAPS uses Cambridge Econometrics' macroeconomic model which integrates a range of social and environmental processes, including carbon emissions and the energy transition. It is one of the most comprehensive models of the global economy and is widely used for policy assessment, forecasting and research purposes. The outputs from this macroeconomic modelling – primarily the impacts on country/regional GDP – are then translated into impacts on financial markets by Ortec Finance using assumed relationships between the macroeconomic and financial parameters.

Ortec Finance runs the projections many times using stochastic modelling to illustrate the wide range of climate impacts that may be possible, under each scenario's climate pathway. LCP takes the median (ie the middle outcome) of this range of impacts, for each relevant financial parameter, and adjusts it to improve its alignment with LCP's standard financial assumptions.

LCP then uses these adjusted median impacts to project the assets and liabilities of the Scheme to illustrate how the different scenarios could affect its funding level. The modelling summarised in this report used scenarios based on the latest scientific and macro-economic data at 30 June 2021, calibrated to market conditions at 31 September 2021.

The modelling included contributions assumed to be paid in line with the current Schedule of Contributions, and the Trustee discussed how future planned changes to the investment strategies would change the analysis. No allowance was made for changes to the investment strategy or contributions in response to the climate impacts modelled.

In practice, the Scheme's investment portfolio may not experience climate impacts in line with the market average. The Trustee considers, on an ongoing basis, how the Scheme's climate risk exposure differs from the market average using climate metrics (which are compared with an appropriate market benchmark) and its annual responsible investment review which considers the investment managers' climate approaches (see pages 18-21).

Uncertainty in climate modelling is inevitable. In this case, key areas of uncertainty relating to the financial impacts include how climate change might affect interest rates and inflation, and the timing of market responses to climate change.

Modelling limitations

As this is a "top-down" approach, investment market impacts were modelled as the average projected impacts for each asset class. This contrasts with a "bottom up" approach that would model the impact on each individual investment held by the Scheme's DB investment portfolio. As such, the modelling does not require extensive scheme-specific data and so the Trustee was able to consider the potential impacts of the three climate scenarios for all of the Scheme's DB assets.

In practice, the Scheme's investments may not experience climate impacts in line with the market average.

The asset and liability projections shown reflect the Scheme's strategic journey plan as at 30 September 2021. No allowance is made for changes that might be made to the funding or investment strategy as the climate pathways unfold, nor for action to be taken in response to the Scheme achieving its long-term funding target.

ClimateMAPS, like most modelling of this type, the modelling does not allow for all potential climate-related impacts and therefore is quite likely to underestimate some climate-related risks, especially for the Failed Transition scenario. For example, tipping points (which could cause runaway physical climate impacts) are not modelled and no allowance is made for knock-on effects, such as climate-related migration and conflicts. In addition, the model presumes that the UK government and bank counterparties will remain solvent, thereby making no allowance for credit risk on government bonds and derivative exposures. However, in a scenario where global warming exceeds 4°C, this assumption may no longer be valid.

Medians from Ortec Finance's model outputs are used to project forward assets and liabilities, which means the results reflect the model's "middle outcomes" for investment markets under the three scenarios. Allowing for market volatility would result in better or worse model outputs than shown. Investment markets may be more volatile in future as a result of physical and transition risks from climate change, and this is not illustrated in the modelling shown.

DC Section

Modelling approach

The return impacts of the climate scenarios represented in this report are relative to the 'baseline'. The baseline represents what is assumed that the market is already pricing in. The baseline includes a 10% weight to Failed Transition, 40% weight to Orderly Transition, 10% to Rapid Transition and 40% to a range of low impact scenarios.

	Rapid Transition	Orderly Transition	Failed Transition
Summary	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.	Political and social organisations act quickly and predictably to implement the recommendations of the Paris Agreement to limit global warming to below 2°C above pre-industrial levels by 2100.	The world fails to meet the Paris Agreement goals; global warming reaches 4.3°C above pre-industrial levels by 2100. Physical impacts cause large reductions in economic productivity and impacts from extreme weather events.
Cumulative emissions to 2100	416 GtCO ₂ e	810 GtCO ₂ e	5,127 GtCO ₂ e
Key policy and technology assumptions	An ambitious policy regime is pursued to encourage greater decarbonisation of the electricity sector and to reduce emissions across all sectors of the economy. Higher carbon prices, larger investment in energy efficiency and faster phase out of coal-fired power generation under a 'Rapid' transition.		Existing policy regimes are continued with the same level of ambition.
Financial climate modelling	Pricing in of transition and physical risks of the coming 40 years occurs within one year by 2025. As a result of this aggressive correction, a confidence shock to the financial system takes place.	Pricing in of transition and physical risks until 2050 takes place over the first 4 years.	Physical risks are priced in two different periods: 2026-2030 (risks of first 40 years) and 2036-2040 (risks of 40-80 years).
Physical risk impact on GDP	Physical risks are regionally differentiated, consider variation in expected temperature increase per region and increase dramatically with rising global temperature. Physical risks are built up from: <ul style="list-style-type: none"> Gradual physical impacts associated with rising temperature (agricultural, labour, and industrial productivity losses) Economic impacts from climate-related extreme weather events Current modelling does not capture environmental tipping points or knock-on effects (e.g., migration and conflict). 		
Physical risk impact on inflation	Gradual physical impact (supply shocks) on inflation included via damages to agriculture and change in food prices. Total impact on a Global CPI Index is +2% in 2100.	No explicit modelling of physical risk impact on inflation (supply-side shocks). Impact on inflation follows historical relationship between GDP and CPI.	Severe gradual physical impact (supply shocks) on inflation included through damages to agriculture and change in food prices. Total impact on a Global CPI Index is +15% in 2100.

Source: Mercer and Ortec. Climate scenarios as at 31 December 2022.

Modelling limitations

Climate scenario modelling is a complex process. The Trustee is aware of its limitations. In particular:

- The further into the future you go, the less reliable any quantitative modelling will be.
- There is a reasonable likelihood that physical impacts are grossly underestimated. Feedback loops or 'tipping points', like permafrost melting, are challenging to model particularly around the timing of such an event and the speed at which it could accelerate.
- Financial stability and insurance 'breakdown' is not modelled. A systemic failure may be caused by either an 'uninsurable' 4°C physical environment, or due to the scale of mitigation and adaption required to avoid material warming of the planet.
- Most adaptation costs and social factors are not priced into the models. These include population health and climate-related migration.
- New and emerging risks, such as the impact of climate change on biodiversity loss, and vice versa, is expected to be integrated into climate scenario modelling over time once the supporting science and impact on econometrics and finance is better understood.