

USS

For members, for the future.

Universities Superannuation Scheme (USS)

TCFD Report 2025

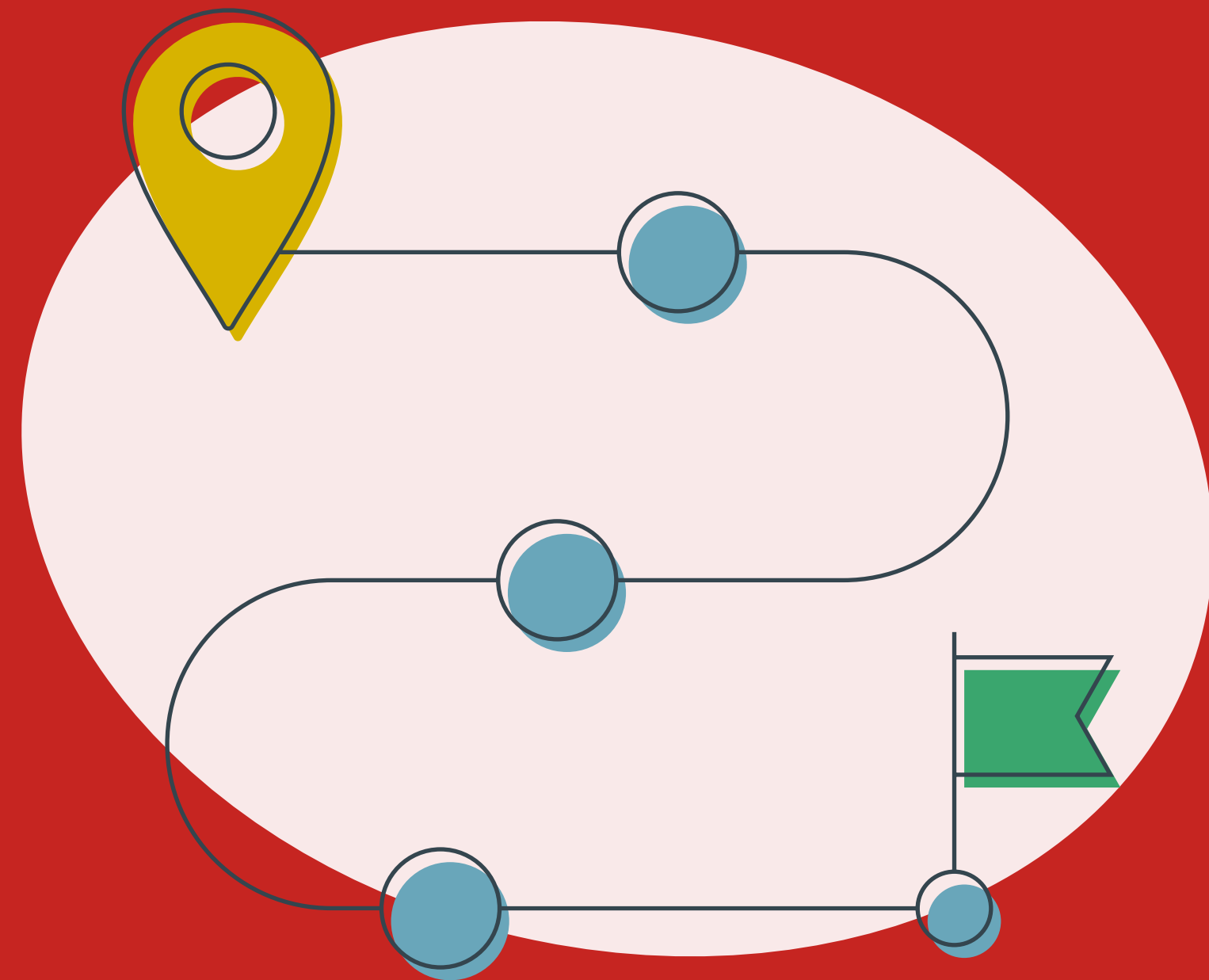


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Front cover image: the Royal Liver Building, USS’s head office in Liverpool

Introduction



Purpose of this report

This report provides an update on how the scheme is managing climate-related risks and opportunities in relation to its investments. It fulfils the requirements of the Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021. The Regulations require us to explain the governance and actions the trustee has taken to identify, assess and manage climate-related risks and opportunities. This is our fifth TCFD Report.

About USS

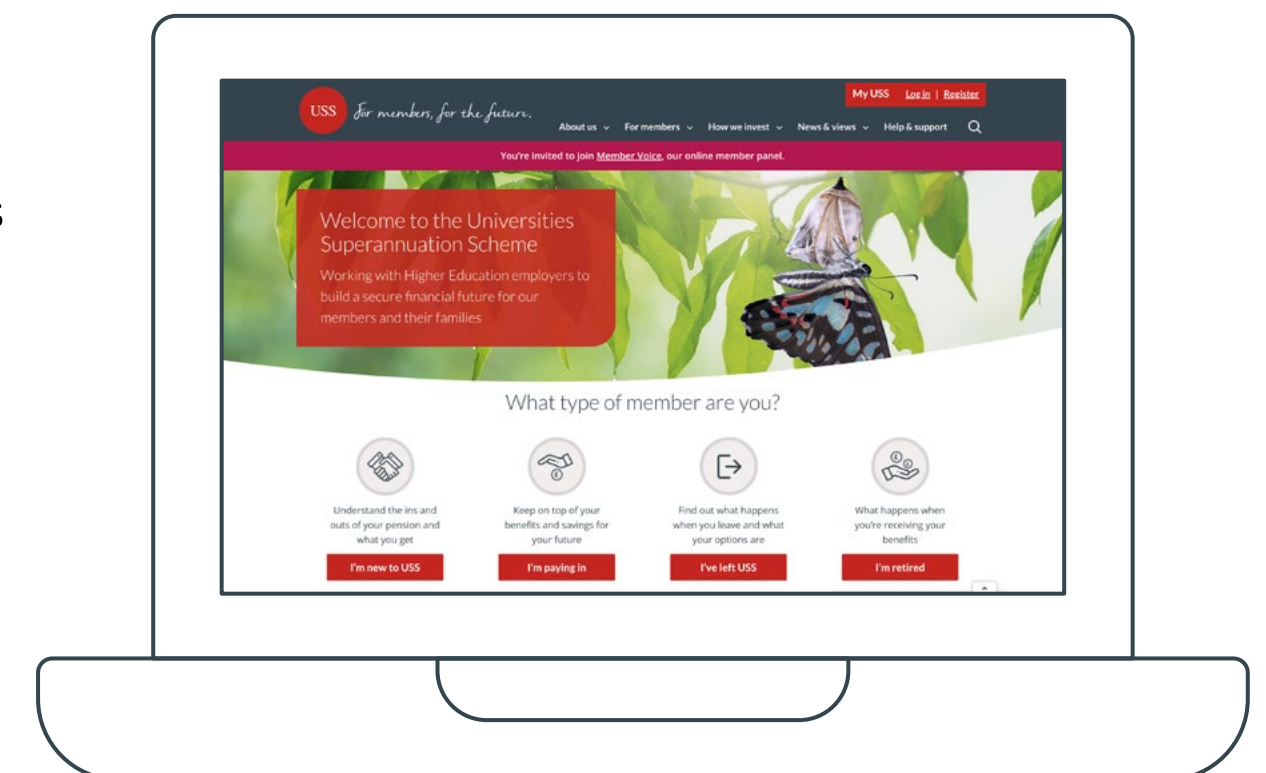
USS was established in 1974 as the principal pension scheme for universities and higher education institutions in the UK. We work with around 330 employers to help build a secure financial future for 577,000 members and their families. We are one of the largest pension schemes in the UK, with total assets under management of £77.6bn (at 31 March 2025). We are a hybrid scheme offering both defined benefit (DB) and defined contribution (DC) pension benefits.

In this report, we use the terms 'USS' and 'the scheme' to refer to Universities Superannuation Scheme. The scheme's corporate trustee is Universities Superannuation Scheme Limited, and we refer to it as 'the trustee', 'we' and 'our'. We refer to its board of directors as the Trustee Board.

Further information on how we invest responsibly

Please see our website for more information, including our approach to responsible investment and our Stewardship Report 2025.

uss.co.uk



Chair’s statement



“
The reality is that the outlook for real-world decarbonisation and achieving a rapid and orderly transition looks bleaker than when we published our first TCFD Report in 2018.
Dame Kate Barker
Chair of the Trustee Board

Welcome to the 2025 Task Force on Climate-related Financial Disclosures (TCFD) Report from the trustee of Universities Superannuation Scheme (USS).

We remain committed to our ambition for our investments to be net zero by 2050, if not before. We are pleased to report that we are ahead of our interim 2025 and 2030 target to reduce portfolio emissions by 25% and 50% respectively for our non-sovereign DB assets.

We continue to engage actively with our investments to undertake effective stewardship on climate-related issues. However, despite the progress made by many businesses to embed climate transition into business strategy and planning to ensure long-term resilience, the reality is that the outlook for real-world decarbonisation and achieving a rapid and orderly transition looks bleaker than when we published our first TCFD Report in 2018. Global government ambitions are not keeping pace with global heating and short-term politics is trumping long-term decision-making.

We are keen to share the work that we have undertaken with external experts including the University of Exeter and Cambridge Econometrics to update our 2023 No Time To Lose scenarios. Our updated four climate scenarios reflect current geo-political reality, including the fracturing of the consensus on the need to set the global economy on a long-term decarbonisation pathway to achieve net zero by 2050.

There are concerns that the world is moving towards a scenario where global temperature rise is likely to be towards three degrees of warming; and so the need to lower global emissions, limit temperature overshoot and put the global economy on a sustainable low-carbon footing is more urgent than ever. In this less optimistic scenario there would likely be lower returns and potentially a worse funding position for the scheme.

While important to work on this topic with our investments, we will focus our efforts on engagement with governments and regulators, encouraging them to adopt policies that are conducive to real-world decarbonisation. We will work with other investors that have long-term horizons in this endeavour.

As a UK-based pension fund, we have a natural home bias in our asset allocation. We would like to continue to allocate a significant share of our capital to investments within the UK where this supports risk adjusted returns for our portfolio. We need a steady pipeline of investible opportunities that support the transition to a low-carbon economy, consistent and joined up regulation, and a stable policy environment. This will require the UK government to have the right financial and non-financial incentives to prompt consumers, businesses and investors to take the necessary steps to move forward on the path to a net zero future. We look forward to taking the next steps on our own climate transition pathway.

Dame Kate Barker
Chair of the Trustee Board



Chair’s statement
Continued

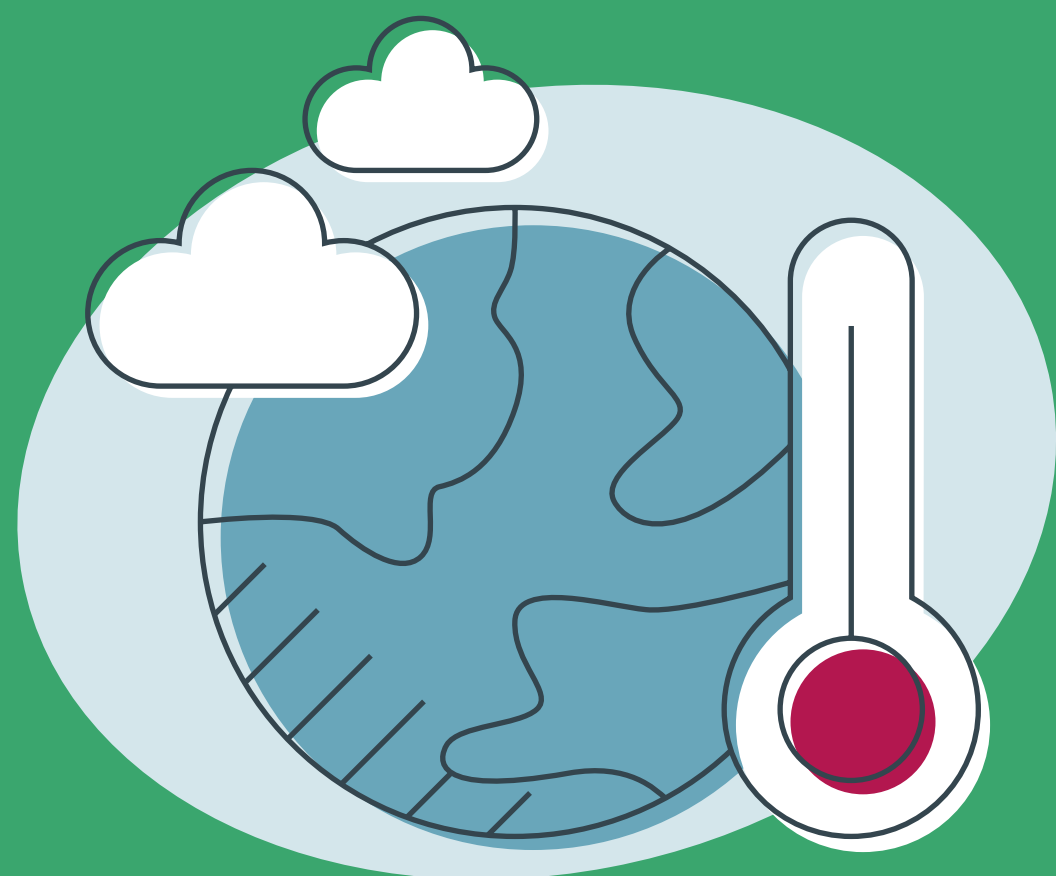
Focus areas	Progress we’ve made during the year	Looking ahead
Put our new decision-useful climate scenarios into practice Enhance our long-term investment outlook to inform asset allocation	<p>We updated our approach to climate scenario analysis. The new analysis includes an enhanced assessment of transition risk and includes physical risk analysis for the first time.</p> <p>We have also redefined our time horizons to be more consistent with investment time horizons which highlights the urgency of the climate challenge.</p> <p>The updated scenarios are being used actively by our asset allocation and investment teams to inform their investment decision-making.</p> <p>The outputs of the scenario analysis are also being used to inform our stewardship activities.</p> <p>See the Strategy and Scenario analysis deep dive sections for more detail.</p>	<p>We will continue to use the updated climate scenarios both to inform top-down asset allocation and bottom-up security selection.</p> <p>We will also use the scenarios to inform our approach to policy advocacy and system-level engagement.</p>
Continue our active ownership approach to climate issues	<p>We have enhanced our integration of material climate-related issues into our advisory and investment decision-making.</p> <p>We continue to engage with carbon intensive assets we own to encourage emissions reduction, transition planning and to gather information to integrate into investment decision-making.</p> <p>See case studies on pages 21 and 22 and our Stewardship Report 2025.</p>	<p>Active stewardship is a core element of our investment approach, therefore we will continue to consider climate transition in our asset-level stewardship and engagement.</p> <p>As a Universal Owner, we will also seek to engage in climate-related policy advocacy with policymakers, standard setters and regulators.</p>

Focus areas	Progress we’ve made during the year	Looking ahead
Further embed net zero into how we invest	<p>Climate transition scenarios featured on the agenda of our Investment Committee Away Day, held in November 2024.</p> <p>The Trustee Board received training on systemic risks and introduction to climate – covering physical and transition risk.</p> <p>Non-investment employees received wider training on temperature alignment and climate-related regulations for USSIM.</p> <p>See page 9 of the Governance section for further information.</p>	<p>We will develop training as required to ensure that our Trustee Board, executives, and employees have the necessary skills to ensure climate considerations are embedded in both investment processes and decision-making and strategic oversight.</p>

Why climate change matters to USS

Here we summarise why responsible investment (RI) is important to USS and what actions we're taking to manage climate-related risks and opportunities.

This section is a summary of our full TCFD Report.



How do we think about responsible investment?

- We are a Universal Owner, which means we have a highly diversified and long-term investment portfolio that, by virtue of its large size, is broadly representative of global capital markets. As a Universal Owner, we're exposed to certain market wide or systemic issues that could impact the investment returns we seek.
- Climate change is a systemic and financial risk that will impact all asset classes, rather than a particular company, industry, sector or country. By acting individually as an engaged and responsible long-term owner to address these systemic issues, and working with other Universal Owners, we seek to minimise any financial impact these could have on our investments.

Why is climate change important to USS and how does it influence our strategy?

- Our long-term ambition is to become a visible leader with respect to RI in areas that are key priorities for the scheme. Over the past year, we have been implementing our revised approach to RI. We established four overarching priority themes:
 - Climate
 - Nature
 - People
 - Governance

- We integrate financially material RI issues in our investment decision-making. This approach helps us manage physical and transition climate-related risks.
- We also recognise that climate change offers potential investment opportunities such as renewable energy and lower-carbon technologies. We have already invested in some of these technologies to seek to benefit from attractive long-term returns as the world transitions to net zero.

What actions are we taking?

- We've been working with the University of Exeter to increase our understanding of the investment risks and opportunities associated with the transition to net zero. This work involves assessing possible future climate scenarios, as well as physical risk and transition risk. This year we updated our climate scenario analysis to inform our investment decision-making and better reflect real-world risks and opportunities.
- We've set an ambition for our investments to be net zero by 2050, if not before. Our interim net zero target is to reduce the emissions of the non-sovereign DB assets in our portfolio by 25% by 2025, and by 50% by 2030 (relative to a 2019 baseline).

How are we performing against our ambition and targets?

- We’re making good progress towards this ambition and are ahead of our interim target as at December 2024 (see Figures 1 and 2), but we are not complacent. Emissions intensity is a ratio based on the value of the scheme’s investments and is therefore sensitive to market moves. Rising asset prices since the 2019 baseline year have contributed in part to the decrease in emissions intensity, and similarly any potential fall in asset prices would increase emissions intensity.
- We treat the rapid pace of reduction in the scheme’s emissions with caution as this progress has not been matched in the real world where greenhouse gas emissions continue to rise. As a long-term investor, it is in our members’ interests to do what we can to reduce climate risk by acting to mitigate the rise in global temperatures. Achieving real-world climate outcomes that will benefit the scheme will be our focus in future.

Figure 1: Emissions intensity of non-sovereign DB assets compared to 2019

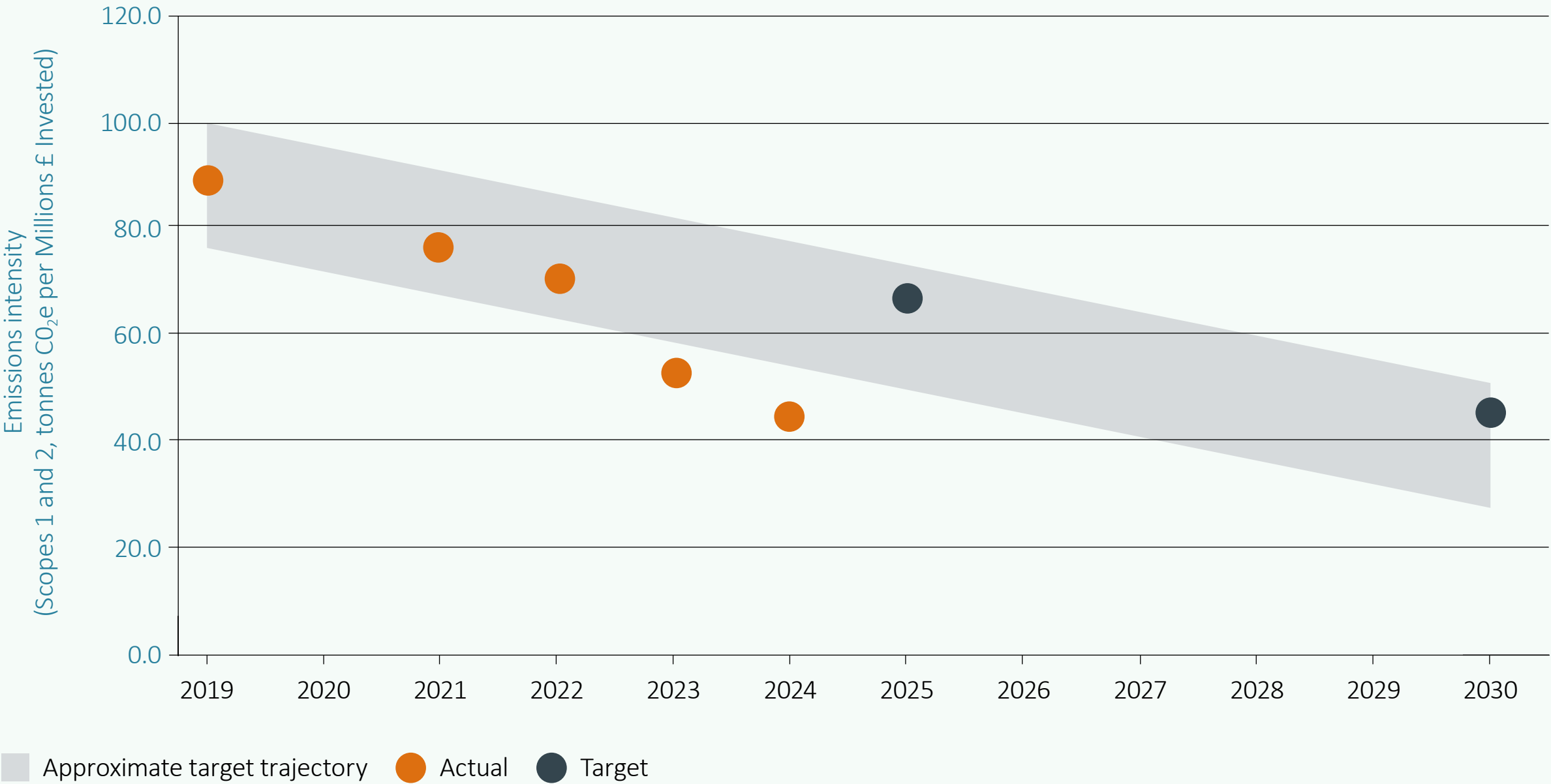
2019 emissions intensity (Scopes 1 and 2) per £m invested	2024 emissions intensity (Scopes 1 and 2) per £m invested	Reduction from 2019 to 2024	Annualised reduction
89.5 tCO ₂ e	44.2 tCO ₂ e	51%	13%

- A world of extreme temperatures would not be a liveable world. We have a legal duty to make sure we can pay our members’ pensions when they’re due. So, we’ll continue to make decisions that are in the best financial interest of our members.

What is a TCFD report and why do we produce one?

- TCFD is a framework that includes recommendations for how organisations should report information on their climate-related risks and opportunities.
- The UK government and different industry regulators have adopted elements of the TCFD framework in their mandatory reporting requirements.

Figure 2: Emissions intensity vs targets



Governance

This section covers how the trustee oversees, assesses and manages climate-related risks and opportunities.

- 7 The scheme trustee
- 8 USS Investment Management Limited
- 9 Training
- 9 External advisers – actuarial, investment and covenant advisers



The scheme trustee

The scheme trustee is a company overseen by the Trustee Board. The Trustee Board is responsible for the oversight and management of climate-related risks and opportunities relevant to the scheme. This includes assessment, documentation and integration into investment strategies and monitoring.

The role of the Trustee Board

The Trustee Board delegates implementation of its investment strategy to its in-house investment manager USS Investment Management Limited (USSIM), a wholly-owned subsidiary of the trustee.

To oversee the implementation, the Trustee Board:

- Approves the scheme's climate-related strategy, including metrics, targets, scenario analysis and time horizons
- Approves USSIM's approach to responsible investment (RI)
- Reviews the USSIM RI team's activities, signing off focus areas and policies, and receiving regular progress updates via the Investment Committee (IC)
- Sets and approves the RI-related risk statements and indicators

The role of the Investment Committee

By formal delegation from the Trustee Board, the IC oversees the implementation of the scheme's climate-related strategy. The IC:

- Assesses USSIM's implementation of the RI strategy
- Questions and challenges USSIM on how it manages climate-related risk and opportunities
- Oversees USSIM's progress against the scheme's climate metrics and targets
- Reviews and assesses the scheme's investment portfolio risks including RI-related risks
- Reviews the process and outputs for climate scenario analysis

The IC assesses USSIM's investment performance each year using an investment balanced scorecard approach. This scorecard includes an assessment of USSIM's performance against RI objectives including the trustee's net zero ambition.

Trustee Board and Investment Committee oversight

The Trustee Board and its IC dedicate significant time and resources to the topics of climate-related risks and opportunities. Activities during the reporting year have included:

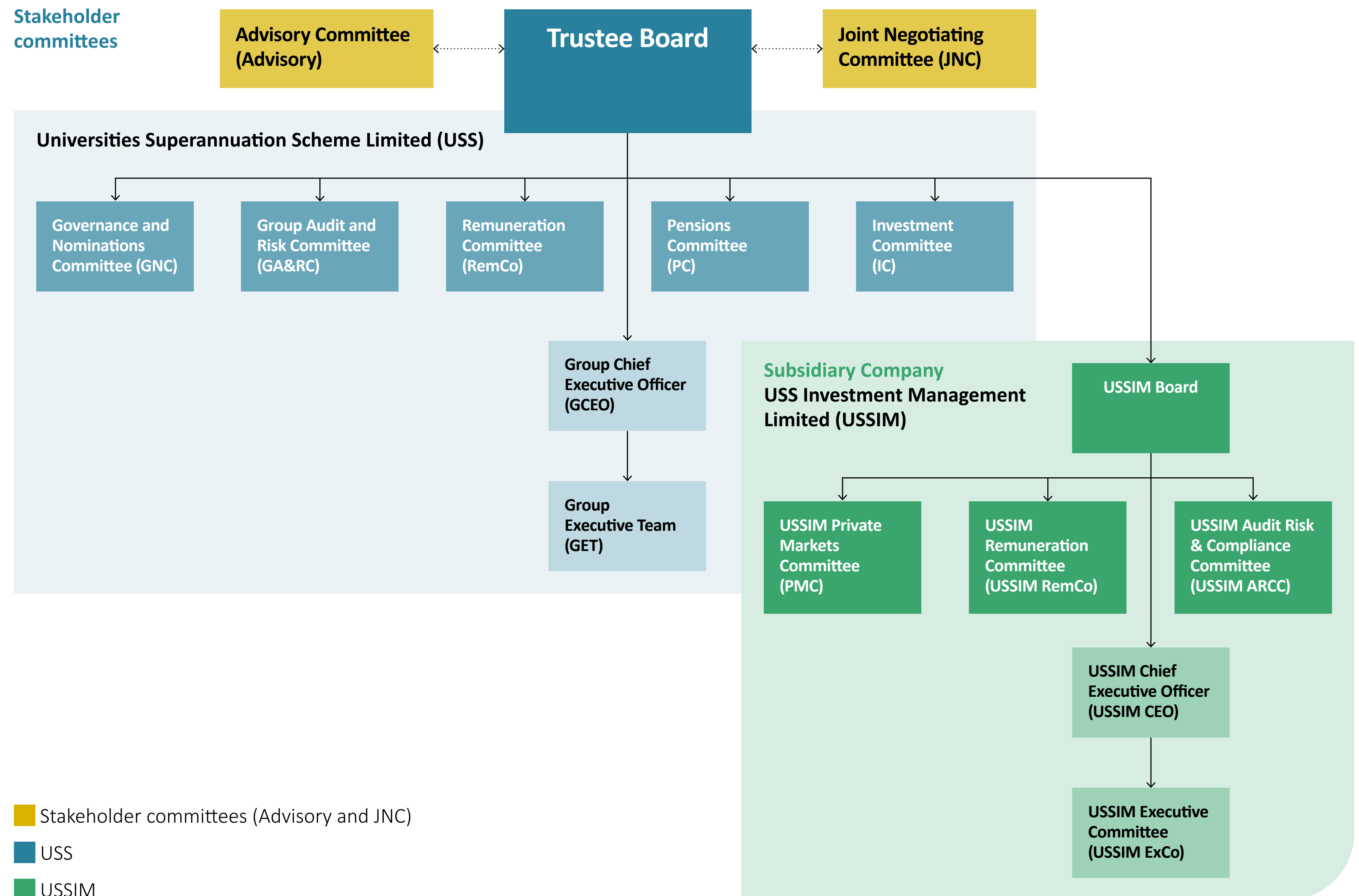
- **Regular updates from the USSIM Board chair** on matters discussed at USSIM Board, including climate-related risks and opportunities
- **Regular updates from USSIM's RI team** covering progress made in achieving the trustee's net zero ambition, RI integration across USSIM's investment teams and changes to the proxy voting guidance. Read more in our [Stewardship Report](#)
- **Sessions at the IC away day** to address systemic challenges linked to climate change
- **External speakers** from the University of Oxford and University College London on potential transition-aligned investment topics

USS Investment Management Limited

By formal delegation under s34 of the Pensions Act 1995 from the Trustee Board, under an Investment Management and Advisory Agreement, USSIM implements the Trustee Board's investment strategy. USSIM manages between 70% and 80% of investments in-house and oversees external managers to manage the rest. In both its advisory and investment management activities, USSIM:

- Manages and monitors climate-related risks
- Identifies climate-related investment opportunities
- Allocates investment mandates to external managers
- Advises the trustee on investment policy and strategy matters (including climate-related risks)

Figure 3: USS Group corporate governance structure – main boards and committees



USSIM is authorised and regulated by the Financial Conduct Authority (FCA). It is overseen by its own board of directors.

USSIM Chief Executive Officer

The USSIM CEO is responsible for ensuring that USSIM effectively implements and delivers the Trustee Board’s investment strategy. The USSIM CEO reports to the USSIM Board and the GCEO. There is further information about the USSIM CEO’s role in the risk management section.

USSIM Executive Committee

USSIM ExCo oversees and manages efforts to achieve the trustee’s net zero ambitions. USSIM ExCo is made up of team heads from: group risk, investment strategy, responsible investment, investment product management and the heads of investment desks as well as operations, finance, compliance, internal audit and HR.

RI Projects Steering Committee

During the reporting year, USSIM established a new committee that is responsible for steering longer-term responsible investment projects that often involve different internal and external stakeholders.

The membership of the committee is a subset of the USSIM ExCo and is supported by key teams across the business involved in delivering RI related projects, including: responsible investment, business change, operations and risk. The RI Projects Steering Committee oversaw the revised climate scenario analysis project, which is described in the Strategy and the Scenario analysis deep dive sections.

USSIM Responsible Investment team

USSIM’s RI team supports the implementation of the trustee’s climate-related strategy. It works with USSIM’s investment teams to integrate climate change and other financially material ESG factors into investment decision-making. It also supports USSIM’s collective and systemic engagement and works collaboratively with investment teams on company engagements and with external fund managers.

The RI team’s work is overseen by the Head of Responsible Investment, who is a member of USSIM’s ExCo.

Training

Ongoing training is important to ensure that both the trustee and USSIM are best equipped to respond to the climate-related risks and opportunities we face. We undertook the following sessions during the reporting year:

Trustee	<ul style="list-style-type: none">The Trustee Board received training on systemic risks to inform the scheme’s RI prioritiesExternal speakers provided the IC with expert insights on a range of climate scenarios and different transition-related technologies
USSIM	<ul style="list-style-type: none">External investment consultants delivered an introductory climate module to USSIM’s non-investment teams covering physical and transition risk, temperature alignment and climate-related regulations
New joiners to USS	<ul style="list-style-type: none">All new staff at USS attend a session on RI as part of the induction trainingAll new Trustee Board and USSIM Board directors receive a 1:1 training session on RI, climate risk and how USSIM’s investment teams manage climate risks and opportunities
Lunch and learn sessions	<ul style="list-style-type: none">Leaders across the business run informal training sessions to keep employees updated on key topicsClimate risk and RI were covered in a session on the review and update of USS’s Strategic Investment Portfolio – the first level of investment decisions made at USSIM

External advisers – actuarial, investment and covenant advisers

The Trustee Board and its committees take advice from external advisers, such as investment, legal, actuarial and covenant advisers, where appropriate. The trustee seeks to ensure, where appropriate, that these advisers:

- Have clearly defined responsibilities in respect of climate change, including climate analysis in their advice to the trustee
- Have adequate expertise and resources to carry out these responsibilities
- Take adequate steps to identify, assess and prioritise any relevant climate-related risks and opportunities

The trustee’s investment advisers attend all IC meetings. The Scheme Actuary attends most Trustee Board meetings when relevant topics are discussed, such as triennial actuarial valuations and matters relating to stakeholders.

Strategy

This section covers our approach to climate-related risks in our strategy which is informed by the climate scenario analysis we have undertaken. More information on the outputs of our scenario analysis is provided in the deep dive section on pages 36–45.

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- 11 Scenario analysis
- 13 Climate-related risks and opportunities
- 14 Scenario analysis impacts
- 16 Strategy next steps

Our approach

As a Universal Owner, and a pension fund with in-house investment expertise and with liabilities extending decades into the future, we believe in an active approach to responsible investment (RI) and stewardship. We recognise that climate change poses macrosystemic or market-wide risks and that these can translate into financially material factors that need to be addressed over the short, medium and long term.

We adopt different approaches to achieve our climate-related objectives.

Actions	Description
Strategic asset allocation	We use horizon scanning, scenario analysis, diversification and stress-testing to respond to unfolding events and address long-term systemic risks like climate change.
RI integration	We seek to integrate financially material RI factors into investment decision-making to identify mispriced assets and enable our investment teams to make better-informed investment decisions. This includes physical and transition climate risks and opportunities.
Engagement	We select and prioritise engagement based on a variety of factors including: <ul style="list-style-type: none">• Alignment with our priority RI themes• The size of our holdings in the entity or the size of the asset, portfolio company and/or property• The materiality of ESG factors on financial and/or operational performance• The adequacy of public disclosure on ESG factors and performance
Exercising our voting rights	We regard exercising our minority shareholder rights through the use of our votes as fundamental to our role as stewards and we aim to vote on all our global assets.
Portfolio net zero alignment	We continue to track and report on our portfolio emissions alongside activities to support broader transition.
Manager monitoring	We assess an external manager’s approach to responsible investment matters prior to appointment and regularly post-investment.
Policy engagement	We engage with regulators, policymakers and standard setters on climate policy which we see as critical in enabling the transition to net zero.
Collaboration	We collaborate with like-minded investors and other industry stakeholders to influence regulators, policymakers and standard setters.

Scenario analysis

We have made good progress against the areas identified in our 2024 TCFD Report.

2024 next steps for our scenario analysis	Progress made
Focus on a shorter-time horizon to limit uncertainty and better understand the interaction between climate transition considerations and other macro drivers.	In our 2025 scenario analysis our short-term time horizon is now less than five years.
Develop a long-term investment outlook to draw out investment implications for capital markets expectations, top-down portfolio construction and country/sector preferences.	During the year, we have enhanced the integration of top-down climate implications into our strategic asset allocation and expanded our approach to identify country-level physical risk. For more information see pages 11–16 and 44
Develop a financial heat map, which shows the impact of climate scenarios on key variables, such as Gross Domestic Product (GDP) and interest rates.	We have assessed how our scenario narratives impact key macro variables revealing a wide range of potential outcomes over short-time horizons. For more information see pages 39–43
Develop a sector heat map, to better understand how the broad sector narrative and macro implications will play out in specific sectors.	We have considered sector-level patterns (i.e. output, emissions) across scenarios. We will use our scenario modelling outputs to collaborate with internal teams and industry experts, integrating these insights into our sector- and company-level decision-making.

2025 scenario analysis approach

We identified the need to update and enhance our approach to climate scenario analysis to better inform our investment decisions. We have implemented this through using bespoke scenario narratives and developed an approach to assess both transition and physical risk exposure. This approach provides a more dynamic and realistic assessment of climate impacts compared to traditional models.

Our approach to addressing both transition and physical risks supports our climate ambition and strengthens our capacity to manage climate-related risks and opportunities, and make informed investment decisions in light of those.

We have carried out quantitative analysis to identify the potential range of outcomes from the scenarios, rather than to derive precise estimates.

A more detailed description of this year’s scenario analysis approach compared with our previous approach is provided in the Scenario analysis deep dive section on pages 36–45.

Time horizons

New time horizons	Previous time horizon
Short term: Less than 5 years	Short term: 5–10 years
Medium term: 5–10 years	Medium term: 15 years
Long term: Over 10 years	Long term: 30 years

We have adapted our time horizons over shorter timeframes to represent more realistic economic and financial market behaviour over the next five to 10 years. By focusing on shorter horizons, we can create a more accurate and actionable framework, better understand the interplay between climate transition and macroeconomic factors for strategic planning and investment decisions.

We acknowledge that the scheme’s liabilities extend over significantly longer time horizons. To address this

we apply a qualitative overlay that considers long-term climate-related risks and opportunities.

No Time To Lose scenarios

We have worked with external experts to re-run and update the No Time To Lose scenarios. This work has involved:

- Incorporating the most recent climate data, projections, and significant changes in markets, policies and regulation
- Providing insights on the economic impact of US policies, geopolitical conflicts and shifts in global trade
- Revising the Boom-and-Bust scenario to consider the possibility of an overheated US economy leading to a recession



Transition Risk Exeter Limited (Trex)

A commercial spin-out from the University of Exeter providing climate scenario analysis for enhanced investment resilience.



University of Exeter

University of Exeter

Climate scientists at the University of Exeter are partnering with USS to develop a physical risk model.



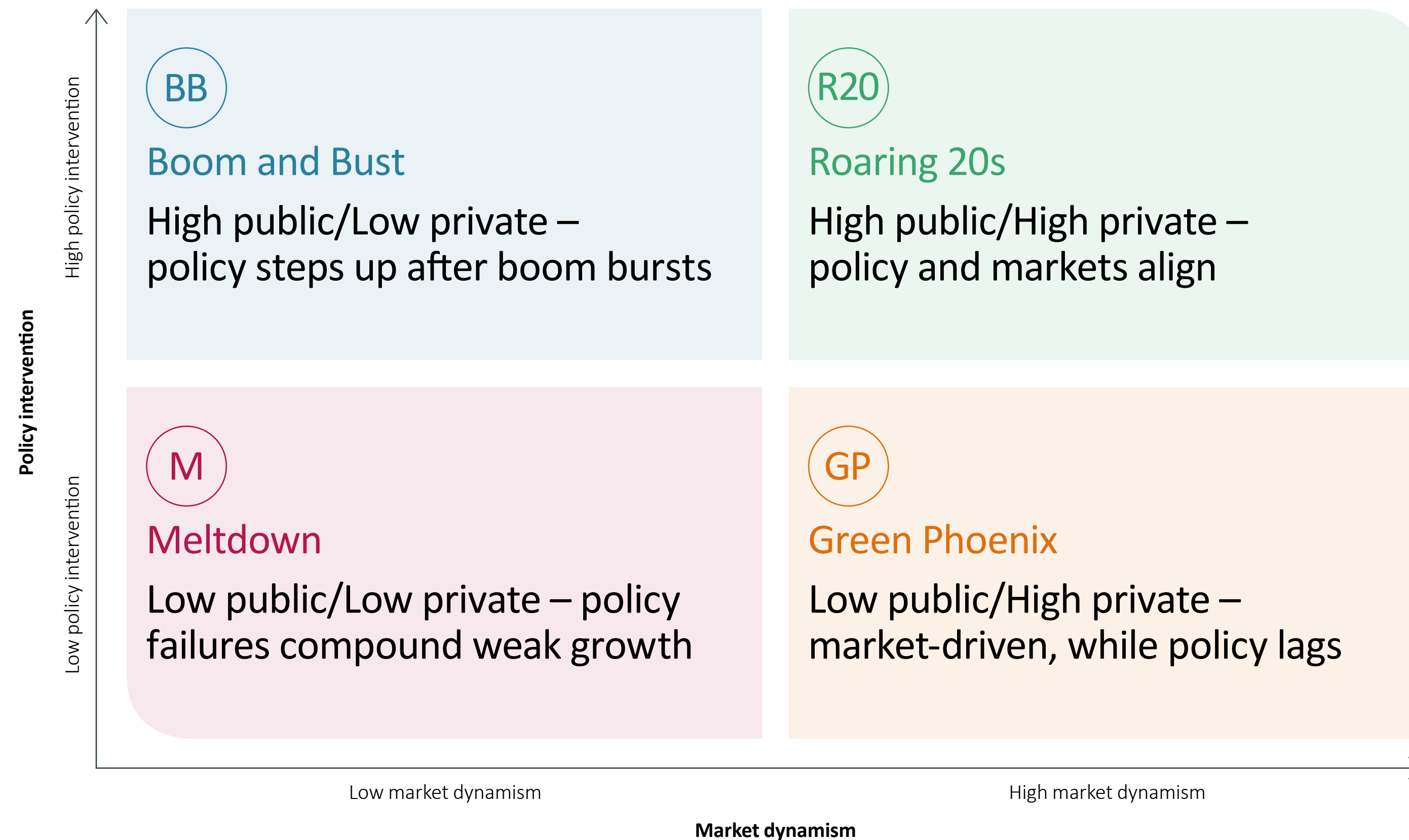
Cambridge Econometrics

Cambridge Econometrics is a global economic consultancy which is modelling transition risk.

Transition risk

Figure 4 illustrates the scenarios, which combine high or low policy action and high or low market dynamism in different ways. The scenarios are further described in the Scenario analysis deep dive section.

Figure 4: Real-world climate scenarios (to 2030) – 2x2 matrix



Physical risk

In partnership with the University of Exeter, we modelled the potential impacts of physical climate risks. Our modelling focused on:

Acute hazards:

- River flooding
- Wildfires
- Heatwaves
- Tropical cyclones
- Droughts

Chronic hazard:

- The impact of heat stress on labour productivity

Climate scientists employed location-specific GDP data and integrated it with projected simulations of hazard occurrence. This enables us to quantify the potential economic impacts of physical climate risks by aggregating localised effects to generate estimated GDP impacts at the national level. Please see page 44 for modelling results.

Available on the Green Futures Solutions website¹, the **No Time To Lose report** outlines the first iteration of our scenarios published with the University of Exeter in 2023.

¹ <https://greenfuturesolutions.com/wp-content/uploads/2023/09/No-Time-To-Lose-New-Scenario-Narratives-for-Action-on-Climate-Change-Full-Report.pdf>



Modelling limitations

Climate scenario analysis is inherently uncertain because narratives may not capture all potential outcomes and modelling based on narratives relies on projections of variables that are impossible to predict with precision.

For the transition risk outputs, we use both the E3ME and Future Technology Transformations (FTT) models for scenario modelling. E3ME, developed by Cambridge Econometrics, analyses interactions between the economy, energy and environment. It is widely used for policy assessment, particularly in areas such as climate change, energy transitions and economic growth. The FTT model, a simulation-based framework within E3ME, predicts the adoption and diffusion of technologies across various sectors.

Further details on the model, including the rationale behind our shift to the E3ME-FTT model, can be found on pages 36–37.

Transition risk

- Translating qualitative assumptions to quantitative models is difficult as there is not always a direct match between assumptions and model levers, such as geopolitical risk. Expert judgement has been crucial in navigating this.
- The E3ME-FTT model is demand-driven. The model estimates consumption first and then production, which may limit its accuracy in assessing shocks to capital stock.
- The E3ME-FTT model considers investment by sector/region. It does not account for changes in capital availability in the financial sector or investment behaviour linked to political dynamics, risk ratings, country risk or debt burdens.

Physical risk

- The quality of underlying data varies significantly across regions. Developed countries with better data on extreme events and their impacts can improve the reliability of our assessments.
- Limited historical validation data makes it challenging to calibrate damage functions for rare, high-impact events.
- Economic damage functions rely on historical climate hazard data, but as economies adapt, future vulnerabilities may differ from past trends.
- Our probabilistic approach captures a variety of outcomes, but deep uncertainty about future emissions and climate responses persists. We use tipping point modifiers in near-term assessments to show potential risk changes.

Climate-related risks and opportunities

Our aim is to adopt a forward-thinking approach that applies an advanced methodology for addressing climate-related transition and physical risks and opportunities.

This approach will enhance our ability to navigate complex climate-related challenges in our investment decision-making. By using the model outputs, we believe we can better manage and mitigate climate-related risks and identify opportunities.

Transition risk

The value in updating the No Time To Lose scenarios is the ability to assess the potential implications of a plausible set of alternative scenarios.

Expected impacts on macro variables

Our analysis of the No Time To Lose scenarios reveals a range of potential macroeconomic outcomes, even in the medium term. The scenarios show a broad range of potential outcomes for global GDP growth depending on the interaction between the energy transition and the economic cycle. Conversely, inflation is found to be a major concern across all scenarios with current projections suggesting a sustained higher and more volatile inflation regime compared to the period following the 2008 Global Financial Crisis driven by more frequent supply shocks and geopolitical tensions.

Higher and more volatile inflation: Inflation is anticipated to be higher and more volatile on average.

Positive and volatile real rates: Our scenarios point towards a world where real rates are likely to stay positive and may be volatile due to GDP and inflation volatility.

Wide range of outcomes for GDP growth: Our scenarios pick up a complex set of potential interactions between drags from geopolitical tensions, climate physical risks and transition dynamics in contrast to the potential upside from capital investments and deployment of productivity-enhancing technologies.

Potential for large drawdowns/boom-bust patterns: A sizeable equity market correction could occur as a result of macro and financial markets imbalances in the Boom and Bust scenario.

Large dispersion across countries and sectors: The implications arising from our scenarios vary widely across different countries and sectors taking into account transition dynamics as well as the geopolitical context including trade wars.

Expected impacts on equity and real yield performance: We use GDP and inflation forecasts to assess potential returns for equities and government bonds over the next five years. Real yields are expected to stay positive across all scenarios due to macroeconomic uncertainty and higher interest rates. Developed market equity returns will vary, with the lowest in the Meltdown scenario and the highest in the Roaring 20s scenario.

> For more details on macro variables impacts see pages 39–43

Physical risk

Our internal country risk scorecard has been updated to include physical risk metrics, which means these risks are now specifically considered in asset allocation.

In the UK, flooding is assessed as being the primary climate risk to investments by 2030, impacting GDP in urban centres and infrastructure corridors. This aligns with the UK’s Third Climate Change Risk Assessment² which highlights vulnerabilities in developed areas along major rivers and cities.

On page 44 we provide the physical risk exposure of an illustrative selection of countries that are meaningfully represented within our investment portfolio.

2 <https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2022>

Scenario analysis impacts

DB part of the scheme

The table below illustrates the impact on asset values and the funding position against each scenario.

Scenario/ Impact	Roaring 20s	Green Phoenix	Boom and Bust	Meltdown
Assets				
Funding position				

Strong positive impact

Moderate positive impact

Slight negative impact

Significant negative impact

Further explanation on the potential scenario impacts on the scheme’s assets and liabilities, resilience of the scheme’s investment strategy and funding strategy and the funding position is described in the next sections.

Impact on the scheme’s assets

We have made significant progress over the past year in integrating the top-down implications of these scenarios into our strategic asset allocation.

- Inflation remains our primary concern across all scenarios, driven by supply-side risks leading to increased average levels of inflation. We have increased our allocation to inflation-hedging assets as a result.
- We have maintained an appropriate level of interest rate hedging while preserving the flexibility to make ongoing adjustments. Our strategy has focused on building a diversified and resilient portfolio allocation with balanced exposure to different sources of risk to safeguard against a Meltdown scenario.

- We have embedded flexibility into our portfolio construction to better withstand Boom and Bust cycles and market shocks as well as to seize opportunities from market dislocations.
- We maintain appropriate exposure to growth assets that should achieve attractive returns in more optimistic scenarios.

Impact on the scheme’s liabilities

Our analysis indicates that across all scenarios, higher inflation and uncertain real yields affect our liabilities, causing significant mark-to-market fluctuations. In the Boom and Bust and Meltdown scenarios, liabilities may rise due to volatile inflation and lower real yields.

Our starting funding position is strong due to recent real yield increases. Some scenarios point towards an increase in the present value of our liabilities, driven by higher inflation or lower real rates, but our recent actions to increase liability hedge ratios should help protect the funding position.

Climate change could increase mortality rates, impacting liabilities more in Meltdown and Boom and Bust scenarios than in the Roaring 20s scenario.

Considerations of longevity risk – Mortality

Mortality risk for DB pension schemes usually appears over the long term, but life expectancies could change quickly if it becomes clear that climate change is worsening.

Direct effects of climate change on UK deaths are likely to be low and uncertain while indirect effects, such as economic disruption, could impact healthcare funding and overall health, potentially affecting life expectancies in the medium to long term.

The resilience of our investment and funding strategies

Our analysis suggests that equity returns will vary more than gilt yields across different scenarios, and the liability driven investment (LDI) assets which the scheme holds will provide some hedging protection against changes in liabilities resulting from gilt returns. As such, we expect the most significant impact on the funding position to be driven by changes in the prices and expected returns of growth assets such as equities.

Transition risks are expected to be more stark in a Meltdown scenario, where we could potentially see lower returns and a challenged funding position. The Roaring 20s scenario is more favourable to growth assets, likely resulting in higher returns and an improved funding position.

Taken as a whole, our scenario analysis indicates that the investment and funding strategy of the DB part of the scheme demonstrates broad resilience to climate-related risks. We nevertheless recognise that the funding position is likely to be significantly challenged in the more extreme cases, and that no scenario analysis can fully predict all possible outcomes.

Impacts on covenant

Our updated 2025 scenarios highlight different potential implications of the transition pathways for employers’ financial capacity, including for key variables such as international fee income and public funding.

For example, in the optimistic scenarios, co-operative geopolitics and strong underlying demand would likely support increased numbers of international students in the UK. Stronger UK economic growth would allow the UK government the fiscal room to raise public sector funding to the UK Higher Education sector.

Conversely, under the less optimistic scenarios, geopolitical fragmentation and weaker economic growth in key markets are dynamics that could reduce international tuition fee income. Limited UK economic growth and competing priorities for government spending could put pressure on public funding of the Higher Education sector in real terms and limit the capacity of the UK government to offset funding gaps.

Variation in employers’ financial capacity under different scenarios may affect their ability to address climate-related risks, some of which are outlined in the Climate-related risks in covenant monitoring and assessment section on page 20.

We recognise that the UK Higher Education sector and the USS employer group is diverse and outcomes for individual employers in any scenario may differ significantly given the heterogeneous nature of the institutions that underpin our covenant. Overall, we would expect that a Roaring 20s scenario would generally be supportive for employer covenant, Green Phoenix and Boom and Bust scenarios would have mixed and scenario-specific implications, while a Meltdown scenario would generally pose some challenges.

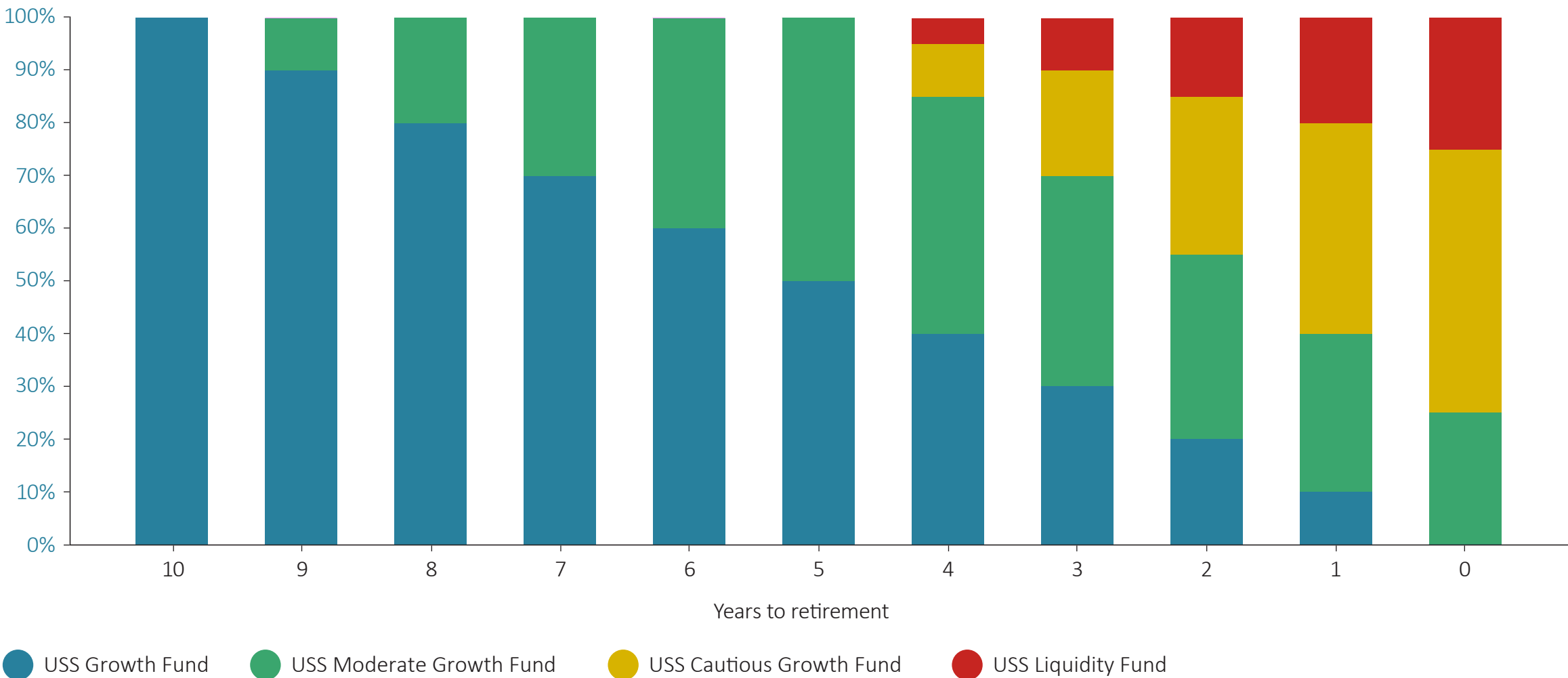
DC part of the scheme

The table below highlights how we incorporate climate considerations into our various DC investment options.

Default Lifestyle	This option is composed of the Growth, Moderate Growth, Cautious Growth and Liquidity funds. The growth funds all have allocations to equities, which are predominantly invested in line with a climate-aware benchmark.
Ethical Lifestyle	This option provides members with the opportunity to invest in a manner consistent with the USS DC Ethical Guidelines, designed to reflect, to the extent possible, the diverse preferences of our members while still aiming to meet the respective fund objectives.
Let Me Do It	This option provides members with a range of asset classes and styles in which they can choose to invest.

We have presented analysis for the Default Lifestyle Option only, as most of our members follow this investment option. Figure 5 provides an illustration of the Default Lifestyle Option structure⁴, showing the balance between the different funds held in 10 years prior to a member’s target retirement age:

Figure 5: The USS Default Lifestyle Option glidepath



The chart illustrates that the allocation to growth assets is highest when a member is 10 years or more from their target retirement age and gradually decreases thereafter. As at 31 March 2025, 87% of the active membership were fully invested in the Default Lifestyle Option.

For DC plans, it is important to assess how climate change might impact various member groups and their retirement outcomes. We have examined the effects for the Default Lifestyle Option on members who are 10 years or more away from their target retirement age and on members who are within five years of their target retirement age.

4 Members can also invest in the underlying funds on a self-select basis

Default Lifestyle Option

Members who are more than 10 years from their target retirement age

The Growth Fund is the primary fund in the Default Lifestyle Option for members who are at least 10 years away from their target retirement age.

R20

The Growth Fund’s large allocation to equities will likely lead to higher returns in a Roaring 20s scenario.

GP

The Growth Fund has a strong allocation to private assets, including infrastructure, that could provide opportunities to bolster returns in a Green Phoenix-type scenario.

BB

While there is high volatility and potential recession in the Boom-and-Bust scenario, portfolio diversification could help to mitigate risks, and we expect the Growth Fund to rebound as markets recover.

M

The Growth Fund is likely to face lower returns in a Meltdown scenario, but diversification across assets classes could provide some protection of capital.

Members who are within five years of the their target retirement age

Members in the Default Lifestyle Option who are planning to retire within the next one to five years have exposure to the Growth Fund as well as the Moderate Growth Fund, Cautious Growth Fund and the Liquidity Fund.

We have analysed how our climate scenarios might impact these members using two assessment periods:

- Members who are expected to reach target retirement age within one year
- Members who are expected to reach target retirement age within one to five years

Climate scenarios	Members retiring within 1 year	Members retiring in 1–5 years
Roaring 20s		
Green Phoenix		
Boom and Bust		
Meltdown		

- Indicates a strong beneficial effect on members participating in the USS Default Lifestyle option
- Indicates a moderate beneficial effect on members participating in the USS Default Lifestyle option
- Indicates a significant detrimental effect on members participating in the USS Default Lifestyle option
- Indicates a slight detrimental effect on members participating in the USS Default Lifestyle option

The Default Lifestyle Option is designed to reduce exposure to growth assets as members approach their target retirement age. This is because as members approach retirement, they have less time to recover any investment losses that may arise from market fluctuations. This phased approach also helps to protect

against and mitigate the potential investment losses that may arise under the various climate scenarios.

For example, the table shows that while a member within one year of their target retirement age may not fully experience the upside from the Roaring 20s scenario due to their reduced allocation to growth assets and increased allocation to the Liquidity Fund, they might expect to have reduced exposure to investment losses in the Boom and Bust or Meltdown scenarios.

Conversely, a member within one to five years of their target retirement age might expect to benefit more from the Roaring 20s scenario due to their higher growth assets and lower Liquidity Fund allocation, but may experience larger investment losses in the Boom and Bust and Meltdown scenarios.

Strategy next steps

- We will conduct an annual scenario update to continue to reflect real-world changes and evolving judgements on what is plausible.
- The updates will be used to collaborate closely with our internal investment teams and industry experts to integrate insights from the analysis into our decision-making.
- Looking ahead, we plan to assess company-level data on physical and transition risk exposure using a consistent approach to scenario analysis.
- We will track and monitor how scenarios develop over time.
- We will use geographic revenue and cost distribution of our investee companies alongside geospatial hazards exposure data to evaluate the physical value at risk associated with our investments. We appreciate that this is a data intensive exercise and it would therefore likely have significant data (availability and quality) limitations.

Risk management

This section covers the processes we have established for identifying, assessing and managing climate-related risk, and how these are integrated into our overall risk management framework.

- 17 Our approach
- 18 Climate-related risk in our risk management processes
- 20 Managing climate-related risk in the scheme’s actuarial valuation process
- 21 Using stewardship to help manage climate-related risks
- 23 Managing climate-related risk at an asset level

Our approach

The Trustee Board has ultimate responsibility for the scheme’s risk management, even where elements of the oversight of certain risks are delegated to sub-committees or USS Investment Management Limited (USSIM). This means the Trustee Board is responsible for setting risk appetites and satisfying itself that appropriate systems are in place across the scheme to help implement the Risk Governance Policy.

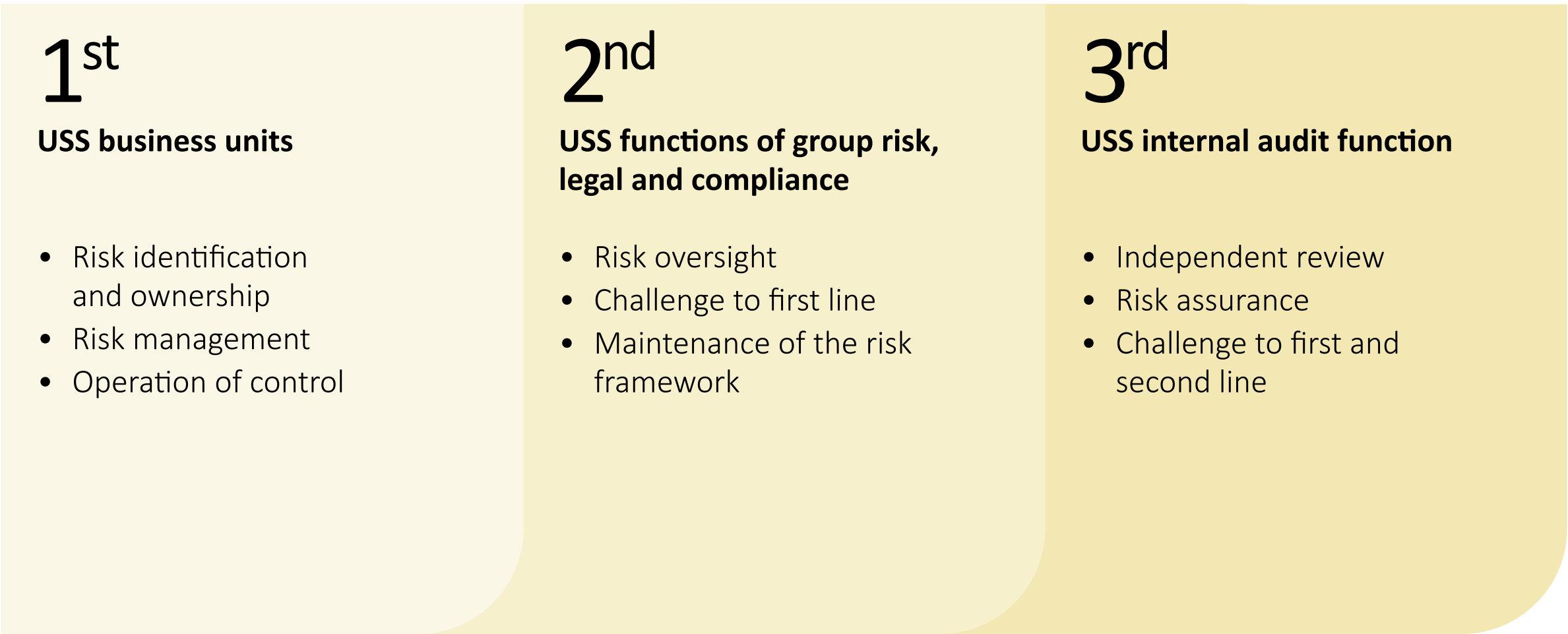
In this context, risk is defined as the possibility that the scheme’s objectives will not be achieved, including, for example:

- Target funding levels are not met
- Expected investment returns do not materialise

Our risk management framework uses three lines of defence – an approach that is embedded across USS, see Figure 6 below.

We use appropriate tools and techniques (the ‘frameworks’) to give the Trustee Board an integrated view of material risks across USS.

Figure 6: The USS three lines of defence risk management approach



Climate-related risk in our risk management processes

We have integrated broader financially material responsible investment (RI) risks, and specifically climate-related risk, into our wider risk governance, monitoring and management processes. This includes processes for identifying and managing these risks. This is our Enterprise Risk Management Framework (ERMF).

Our Enterprise Risk Management Framework

Our ERMF comprises a set of processes to identify, manage and report operational risks. This includes both forward- and backward-looking risk disciplines, applied both top-down and bottom-up. The figure below shows the key activities included in the ERMF.

Top-down approach

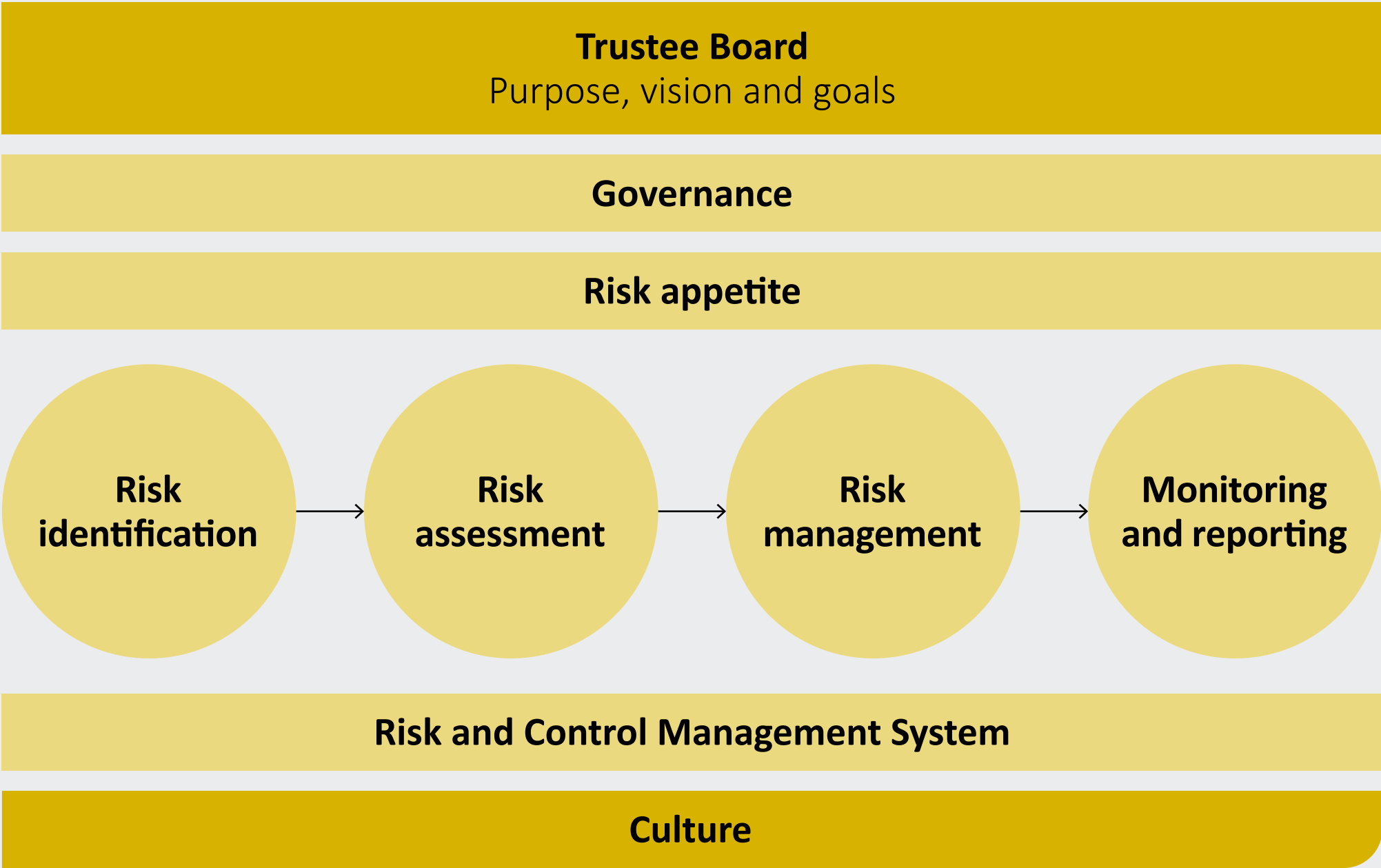
We take a top-down approach to identify and prioritise the high-level (enterprise-level) risks that pose significant potential for an adverse outcome, whether financial, non-financial or reputational. This allows a focused and robust approach to identifying and managing our strategic and operational risks.

Where RI risks, including climate-related risk, are identified, we take actions to manage the potential impact on our assets. The process of identifying these high-level risks is conducted annually and refreshed as necessary.

Climate-related risk in the scheme’s risk register

Risk	Description	Impact	Control/mitigation
Climate change risk	The risk of material financial impact from climate change, driven by transition risk where asset values are impacted by economic transition in response to climate change, and by physical risk of damage to assets from extreme climate and weather events.	This could lead to loss of value of assets and/or asset stranding from transition to a low-carbon economy or from actual or potential physical damage, especially where we are long-term holders of those assets.	<ul style="list-style-type: none">• Our ambition is for our investments to be net zero by 2050, if not before. Our interim net zero target is to reduce the emissions of the non-sovereign DB assets in our portfolio by 25% by 2025, and by 50% by 2030 (relative to a 2019 baseline)• Integration of climate risk into our governance and risk management processes with oversight at Trustee Board level• Integration of climate risk into investment decision-making process• Regular scenario analysis and modelling to help identify and quantify the systemic impact of climate change on the real economy and markets• USSIM Executive Committee to monitor and provide oversight of progress towards the net zero ambition• Stewardship of emissions intensive assets, through direct and collective engagement and system-level engagement where appropriate, to ensure climate risk in all forms is being appropriately managed• Dedicated in-house RI team with specialist expertise to support investment teams and trustee, in managing the risk arising from systemic issues linked to the transition to a net zero economy

Figure 7: Risk management framework



Climate risk in our Risk Appetite Framework

The Risk Appetite Framework consists of Risk Appetite Statements (RASs) and Key Risk Indicators (KRIs). This is one of the key processes by which we manage and govern the risks associated with RI. Risk appetite is the maximum level of risk we are willing to accept in pursuit of our objectives. It is codified in our RASs, recommended by the Investment Committee (IC) and set by the Trustee Board. It also includes a set of KRIs, setting the parameters within which USSIM is to manage the scheme’s investments. The RASs and KRIs cover a range of risks, from short-term liquidity risk to long-term funding risk. This brings a multi-faceted view of risk applicable over multiple time horizons. Through this process, a RAS for climate risk has been set at the highest level of governance in the organisation – the Trustee Board. These risks are monitored using the relevant KRIs and reported to appropriate governance bodies within USS.

Our risk appetite disposition is ‘cautious’ in respect of climate-related issues being detrimental to performance. In our risk management framework, ‘cautious’ means that we prefer safe options that are low risk and have either moderate financial or opportunity cost, or only have the potential for moderate reward.

Risks for which the Trustee Board has set risk appetites are assigned to an owner at Group Executive level. The USSIM Chief Executive Officer is the executive owner for climate risk, with the following responsibilities:

- Ongoing identification, monitoring and management of climate risk
- Understanding the implications of the risk on USS strategy/operations and investments

- Directing the appropriate risk response (mitigate, avoid, transfer, accept) and making sure it is applied effectively
- Implementing and enforcing risk management policy
- Making sure frameworks for managing climate risk are available and applied across the organisation
- Performing a regular risk assessment of risk exposure against risk appetite

The USS Group Chief Risk Officer (CRO) oversees and challenges how relevant executives manage risk. The CRO supports USSIM investment teams in integrating climate risk into the Risk Management Framework and provides input to the IC’s assessment of USSIM’s performance in managing climate risk.

Bottom-up approach

Business areas are required to maintain risk registers that document the risks and controls associated with their processes.

These risk registers incorporate climate and other RI risks. They also include evidence that investment desks and supporting functions are integrating financially-material RI considerations into their everyday processes and decision-making, where appropriate.

The business risk registers are reviewed periodically with input from the RI team and receive oversight and challenge from the Group Risk team. The results of these assessments are reported to relevant governance forums quarterly, for example, the Risk Committees. The results also inform the Group Risk team’s bottom-up assessment of these risk registers, which contributes to the qualitative assessment for the DB and DC balanced scorecard assessment.

Climate-related risk in our Investment Framework

Our Investment Framework reflects the investment-related RASs and KRIs, including those for climate risk. This makes clear the parameters within which USSIM is to manage the scheme’s investments.

The Investment Framework also includes an assessment of investment performance using an investment balanced scorecard for each of defined benefit (DB) and defined contribution (DC).

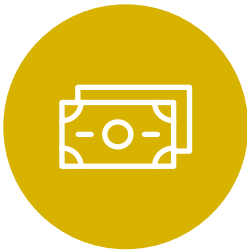
Investment balanced scorecard

The DB and DC investment balanced scorecards are a mechanism for the IC to assess USSIM’s investment performance, risk management and advice. The DB and DC scorecards both include a section on RI, which includes ESG integration, managing climate risk and progress towards our net zero ambition. The scorecards are produced twice each year.

The scorecard reflects the Trustee Board’s belief that USSIM’s investment performance should not be assessed one-dimensionally using an investment benchmark. Instead, it should be assessed using a range of quantitative risk-and-return metrics and qualitative assessments, including reference to many of the KRIs used for governing risks.



1. Investment return



3. Active management



5. Responsible investment



2. Investment risk



4. Portfolio resilience



6. Advice and support

RI integration, net zero, and climate risk in the balanced scorecards

The RI category of the balanced scorecard assesses the scheme’s and USSIM’s progress against these KRIs:

- Net zero ambition: An assessment by the risk team of how USSIM is delivering against the scheme’s net zero ambition
- Physical risk: An assessment by the risk team of how USSIM is managing physical risk
- ESG integration: An assessment by the risk team of how USSIM is integrating financially material RI factors (including reporting and stewardship)

USSIM’s RI performance is qualitatively assessed annually by the USS Group Risk function. This feeds into the overall scorecard assessment by the IC, alongside other assessments of USSIM’s performance against trustee’s stated objectives over the period. That overall scorecard assessment is used as an input by the Remuneration Committee in setting the overall compensation for USSIM.

The Investment Framework, of which the balanced scorecard is a part, therefore provides an integrated governance framework for climate risk, linking the assessment of investment risk and performance back to Trustee Board strategy, objectives and risk appetite.

Managing climate-related risk in the scheme’s actuarial valuation process

We use the Integrated Risk Management Framework (IRMF) as an approach to managing valuation risk, this is in line with The Pensions Regulator’s defined benefit funding guidance.

The IRMF is informed by expert professional advice from specialist sources covering employer covenant, investment and actuarial considerations and potential impact on liabilities.

We integrate this advice into a framework for addressing how we manage risk in the context of the covenant. The following sections cover the impact of climate risk on covenant and liabilities respectively.

Climate-related risks in covenant monitoring and assessment

Consideration of climate risks is embedded into our covenant monitoring and assessment activities and is reflected in our overall covenant assessment. As part of those activities, we:

- Review information on climate-related issues published by employer representative bodies
- Discuss with employers how climate risks are captured in their risk management processes
- Understand how climate-related risks are incorporated into employers’ scenario analyses
- Seek to understand opportunities for the sector from climate-related areas of research and innovation

In our view, the climate-related risks that are relevant to the sector include:

- Cost of transitioning campuses towards more energy efficient heating, lighting and transport
- Increased flood and extreme weather events affecting campus design and the cost or availability of insurance
- The impact of climate-related risks on employers’ endowment and investment portfolios
- Physical climate risks leading to increased costs and disruptions to travel, making it more difficult to attract and retain international students – particularly those from regions more vulnerable to climate impacts

As part of our covenant assessment for the 2023 valuation we interviewed university employers, with consideration of climate-related risks and objectives forming part of that engagement. The key findings are described in last year’s TCFD Report. We intend to revisit this process as part of the next valuation of the scheme in 2026.

In the Scenario analysis impacts section on page 14 we provide further analysis on the impacts that could present risks to the UK Higher Education sector and the covenant.

The impact of climate-related risks on liabilities

We consider the effects of climate risks in setting our assumptions for the valuation of the scheme’s liabilities and future contribution requirements. Climate change could affect our liabilities in a variety of ways, including potential changes to Gross Domestic Product, inflation, real interest rates, mortality rates and longevity. We consult with our advisers to understand these impacts on liabilities.

USSIM produces capital market assumptions that consist of fundamental building blocks to construct returns. We have made allowances for climate change within the growth component. These assumptions are used to determine discount rates.



Using stewardship to help manage climate-related risks

As a long-term, responsible investor, it is in our members’ interests to act as an active steward of our investments and do what we can to minimise climate-related risks in the portfolio and in the wider market. As a Universal Owner we are exposed to certain market-wide or systemic issues, such as climate change, which could impact the investment returns we seek.

We take an active approach to stewardship. We engage with the assets we own to encourage emissions reduction, transition planning and gather information to integrate into investment decision-making. We exercise our shareholder rights through voting to encourage better standards of corporate governance and management of environmental and social issues. We work with other asset owners and investors in collaborative engagement. We engage with policymakers and regulators to improve how markets operate and address climate-related risk in the real world.



Case study: NTPC – multi-pronged approach to reduce emissions intensity

NTPC is a fossil fuel-based energy producer that operates power generation plants across India. The company set a target to reduce its carbon emission intensity by 21% by 2032 to 679gms/KWh (relative to 2022–23 emissions intensity of c.840gms/KWh).

Since 2022, when we first invested in NTPC, there has been a slower than expected increase in power generation from renewables. This is due, in part, to the ‘Make in India’ initiative which requires solar PV cells and modules to be purchased from approved manufacturers. We met with the Sustainability Officer to understand what initiatives are being undertaken to progress towards its target. We learnt that NTPC is working to reduce its emissions intensity by targeting 60GW renewable capacity by 2032. It has 12GW of renewable capacity currently under construction and a further 11GW in the pipeline. It is also commissioning new power plants using ‘ultra super critical’ technology which results in approximately an 8% reduction in carbon emissions intensity compared to older ‘sub critical’ technology. As these new plants come on stream the older, inefficient plants will be used less. We will continue to monitor the impact of these initiatives on the overall emissions intensity of NTPC.



Case study: Moto’s energy transition strategy

We are the majority shareholder in motorway services company Moto. We engage with and support the management team at Moto to drive the energy transition strategy and its ESG strategy, which is focused on three priority areas of People, Planet and Product.

“
We believe its focus on passenger car electric vehicle and electric Heavy Goods Vehicle charging capabilities will help to ensure the business enhances its value proposition for customers and supports the wider energy transition across the UK.

Moto continues to progress towards its goal of becoming the UK’s number one en-route electric charging destination by expanding the number of ultra-rapid electric vehicle chargers (>250kW) at its sites across the UK. The company finished 2024 with 811 ultra rapid electric vehicle chargers (c. 300 more chargers since 2023) covering 25% more Moto sites.

We believe that Moto remains committed to meeting the current and future needs of its clients, society and the environment.



Case study: BRUC Energy – progress since 2023

We continue to support the growth of BRUC Energy, the Spanish renewable platform we have invested in since 2021. As a joint-controlling shareholder, we work closely with the senior management team to achieve the ambition of making the company a leader in solar and wind renewable energy.

Over the course of 2024, BRUC has:

- Reached approximately 1.6GW (up from 1GW in 2023) of gross attributable solar PV installed operating capacity successfully adding 0.6GW of assets
- Generated more than 2.0GWh (up from 1.8GWh in 2023) of gross renewable energy, enough to power circa 512,000 homes for a year and avoided CO₂ emissions of 524,000 tonnes (408,000 tonnes in 2023)
- Contributed to the creation of 23 corporate jobs and generated more than 3,570 training hours, due to the significant construction activity undertaken
- Recruited a head of ESG to take forward sustainability and ESG initiatives and embed them into business operations



Case study: Intelligent Building Operating System (IBOS) in offices

Our property portfolio includes multi-let office buildings, all of which consume energy and produce Scope 1⁵ and Scope 2⁶ greenhouse gas emissions. Our Property Managers, Workman, have developed a bespoke intelligent energy management system to reduce energy consumption.

The Intelligent Building Operating System (IBOS) technology has been introduced at nine properties in our portfolio. It uses real-time data and technology to optimise energy efficiency and environmental performance. Whilst using IBOS we have consistently identified and addressed energy inefficiencies, dynamically adjusted energy use to occupancy levels, and implemented smart technology protocols delivering measurable and impactful results.

- Since its first installation at Atrium Court, Glasgow in February 2023, energy usage has reduced by 33%, saving over 1.9 million kWh, cutting costs by £371,702, and lowering emissions by 360,786kg CO₂e.
- We installed IBOS at 15 Golden Square, London in January 2024. It has delivered a 23% energy saving, conserving 238,480kWh, cutting costs by £34,899 and reducing 46,491kg CO₂e.
- Now installed across nine properties, IBOS has cumulatively saved us and our occupational tenants £695,051, reduced consumption by 3,258,111kWh and cut 626,239kgCO₂e.

These successes represent a major stride towards achieving our net zero goals through operational energy management.

5 Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organisation.
6 Scope 2 emissions are indirect GHG emissions from the generation of purchased energy for example electricity, steam, heat or cooling.

Managing climate-related risk at an asset level

In addition to the risk frameworks and tools described in previous sections, we have processes for identifying, assessing and managing climate risk at scheme, portfolio, asset class and asset level.

In the boxes, we provide some examples of how we integrate financially material RI factors in our investment decision-making for the assets we manage. Further details and examples are provided in our [Stewardship Report](#) in Principle 7, specifically in the section: Our approach to RI integration by asset class.

Our climate-related approach applies across all scheme assets, whether managed internally by USSIM or by external managers. For externally managed assets, we assess a manager’s approach to RI prior to appointment and regularly post-investment. This involves reviewing external managers’ RI-related resources, policies, processes and stewardship activities. Please see our [Stewardship Report](#) for more information, and specifically Principle 8: Monitoring managers and service providers.

Listed equity: Global Emerging Markets

- Uses in-house tools for ESG analysis with a focus on using data and information to improve the quality of engagement with portfolio companies
- Engages with the most carbon intensive companies in the portfolio, improving understanding of their decarbonisation strategies and monitoring their progress to date
- Each portfolio investment is subject to in-depth due diligence, which integrates a review of responsible investment considerations, including climate-related risks and opportunities

Listed equity: Developed Markets

- Manages the Long-Term Real Return (LTRR) mandate, aiming for strong long-term returns with lower risk than the broader equity market
- Over £4bn is now invested in what we believe to be high-quality companies with strong competitive advantages
- Integrates responsible investment considerations at every stage of the investment process
- Net zero analysis carried out for each company invested in, covering both climate risks and opportunities. Management incentives, climate governance, and external scores and verification are reviewed

Private markets: Direct Equity

- ESG assessment includes climate-related risks and opportunities in the due diligence for all direct investments
- Additional due diligence conducted for climate-related issues such as flood risk undertaken where necessary, which may include the use of external environmental advisers/consultants

Private markets: Property

- Assesses potential physical climate risks, such as flood and storm damage during due diligence stage
- Legal requirement for Energy Performance Certificates (EPCs) for UK properties, which enables assessment of a building’s energy efficiency and potential exposure to higher energy and/or carbon costs
- IBOS technology introduced at nine properties in our portfolio to optimise energy efficiency
- Long standing Responsible Property Investment programme which focuses on reducing energy consumption in major property assets to mitigate potential carbon exposure

Fixed income: Sovereign Debt

- Use of a proprietary tool, which ranks countries based on ESG factors. Improving ESG country scores are viewed as an indicator of an improving outlook for a country, whilst deteriorating ESG scores are a reason to increase caution towards a country
- Climate and carbon exposure are built into modelling, with allocations favouring countries showing improvement and reducing exposure to those with significant increases in coal production and emissions

Fixed income: Credit (Corporate Debt)

- Adopts a screening-based approach using external ESG risk scores from major credit rating agencies, conducting monthly screenings for any red flags
- ESG issues are flagged where financially material, with a particular focus on environmental factors and climate risks, and further analysis conducted to assess creditworthiness. A more in-depth review is undertaken for longer-term holdings
- Meet regularly with issuers to discuss ESG risk when identified as financially material

Metrics and targets

This section covers the metrics we use to assess and manage climate-related risks and opportunities, and the targets we use to measure our progress towards our net zero ambition.

24

Our four metrics

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Metrics as at December 2024

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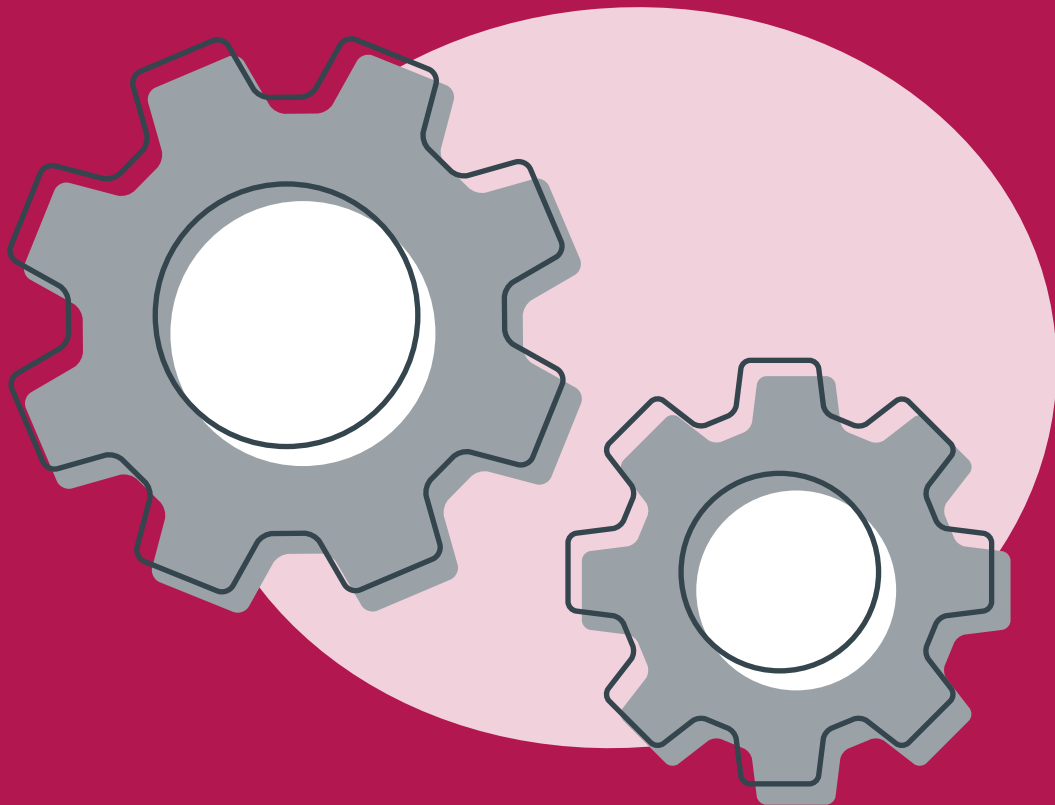
Progress against our targets

28

Our methodology, rationale and data sourcing

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Data limitations and validation



Our four metrics

These metrics cover our non-sovereign emissions. We report on our sovereign emissions on page 26.





Category	Our chosen metric	Explanation and scopes covered
<div></div> <div>Absolute emissions</div>	Portfolio emissions (tCO ₂ e)	Absolute amount of carbon dioxide and equivalents emitted (Scopes 1 and 2) by our investments: Million tCO ₂ e. We currently focus on Scopes 1 and 2 and report Scope 3 emissions separately where available. We expect to see this metric reduce substantially over the long term as the scheme and the global economy decarbonise.
<div></div> <div>Emissions intensity</div>	tCO ₂ e per £million invested	The amount of carbon dioxide and equivalents emitted per million pounds of the scheme’s investments: tCO ₂ e per £million invested on an Enterprise Value Including Cash (EVIC) basis ⁷ . We currently focus on Scopes 1 and 2 and report Scope 3 emissions separately where available. We expect to see this metric reduce substantially over the long term as the scheme and the global economy decarbonise.
<div></div> <div>Portfolio alignment</div>	Percentage of portfolio emissions from assets aligned with a pathway of well below 2°C	This assesses the proportion of our assets that are on a decarbonisation trajectory expected to align with 2°C or below. This is based on the warming path as assessed by S&P Trucost modelling. This forward-looking metric shows how assets are transitioning.
<div></div> <div>Data quality</div>	Estimated reliability of sourced data for proportions of our investments	We group different sources of Scope 1 emissions data by an estimate of their accuracy. We then report the proportion of our investments for which emissions data were sourced using that method. This metric tracks how well investments are disclosing their carbon exposure and climate transition plans, giving us greater confidence to use these data in our investment decision-making. We expect to see the percentage increase in future.

7 Enterprise Value including Cash (EVIC) is the sum of market capitalisation of ordinary shares, plus the market capitalisation of preferred shares, and the book value of total debt. Note that unlike Enterprise Value, cash or cash equivalents are not deducted from EVIC. This approach avoids issues that can arise from using Enterprise Value, such as a negative enterprise due to a large cash/cash equivalent balance, or the over-allocation of emissions

Metrics as at December 2024

Our total assets under management (AUM) are £77bn, as at 31 December 2024, where £73.5bn is defined benefit (DB) and £3.5bn is defined contribution (DC). Within DB, £47.7bn are non-sovereign assets and £25.8bn are sovereign debt.

DB metrics excluding sovereign debt

Category	Description	Dec 2023	Dec 2024
AUM	Net Asset Value (NAV) of non-sovereign assets for which absolute emissions are measured	£47.3bn	£47.7bn
 Absolute emissions	Absolute amount of carbon dioxide and equivalents emitted (Scopes 1 and 2) by the investments: Million tCO ₂ e	2.6 MtCO ₂ e	2.1 MtCO ₂ e
 Emissions intensity (Scopes 1 and 2)	The amount of carbon dioxide and equivalents emitted per million pounds of scheme investments: tCO ₂ e per £million invested	54.6 tCO ₂ e per £m invested	44.2 tCO ₂ e per £m invested
 Portfolio alignment	Proportion of portfolio emissions from assets aligned with a pathway of well below 2°C	45%	47%
 Data quality	Proportion of assets for which Scope 1 emissions data was reported or derived from reported information	64%	69%
Scope 3 emissions	Scope 3 emissions	8.5 MtCO ₂ e	11.3 MtCO ₂ e

About these metrics:

- 2023 data are taken from last year’s TCFD report, calculated for 31 December 2023, on 15 January 2024
- 2024 data was calculated for 31 December 2024, on 31 January 2025. Where values for NAV and EVIC were not in GBP, the exchange rate from Bloomberg was used as at 31 December 2024
- The emissions intensity of non-sovereign DB assets is calculated using emissions intensity at the security level, which is then aggregated to fund level and scheme level using a weighted average method based on NAVs
- The metrics represent 100% of the non-sovereign DB assets. Where data is unavailable, we use estimated emissions or assume the uncovered part of the portfolio is the same as the covered part
- All reported numbers relating to portfolio alignment and data quality are reported to the nearest whole number. Other reported numbers are rounded to one decimal place
- The emissions intensity of non-sovereign DB assets decreased, from 54.6 tCO₂e per £m invested to 44.2 tCO₂e per £m invested, on a Scope 1 and 2 basis
- While the Scope 1 and 2 emissions attributable to the DB scheme continue to fall, we believe this does not reflect a decrease in the scheme’s exposure to the risks from climate change given the lack of real-world progress towards net zero
- Portfolio alignment data are reported for £19.6bn of non-sovereign DB assets for which S&P Trucost Paris Alignment data were available
- Data quality has continued to improve, with Scope 1 emissions reporting rising from 64% at December 2023 to 69% of weighted holdings in 2024, including companies where emissions data is derived from reported information
- Scope 3 emissions are reported for 54% of the non-sovereign DB assets. Scope 3 emissions have risen

during the reported period, which is in part due to increased reporting/estimation of Scope 3 emissions. Scope 3 data is most suitable for time series analysis of a single company, rather than aggregation, as noted by the GHG protocol⁸. Therefore we do not take this measure alone as evidence of Scope 3 emissions rising for the scheme’s assets

- Efforts are made to integrate the risks and opportunities from climate change across the scheme’s assets. Approximately £4.3bn of developed market equity investments in-house are made through a long-term portfolio with a focus on high-quality companies, with this mandate reporting a significantly lower emissions intensity per £m invested than its benchmark index. Additionally, £7bn of equity assets are managed through a climate-tilted fund, which seeks to track its parent index while having a materially lower emissions intensity than its parent index and reducing emissions intensity each year

8 GHG Protocol reference to Scope 3 emissions: “The Corporate Value Chain (Scope 3) Standard is designed to enable comparisons of an individual company’s GHG emissions over time. It is not designed to support comparisons between companies. Differences in reported emissions may be a result of differences in inventory methodology, company size or structure. Additional measures are necessary to enable valid comparisons across companies, such as consistency in methodology, consistency in data used to calculate the inventory, and reporting of intensity ratios or performance metrics.”

Sovereign debt (DB)

Category	Description	Dec 2023	Dec 2024
AUM	NAV of sovereign assets	£26.9bn	£25.8bn
Absolute emissions	Absolute amount of carbon dioxide and equivalents emitted (Scopes 1 and 2) by the investments: Million tCO ₂ e (production emissions – exported emissions + imported emissions)	Restated as 5.2 MtCO ₂ e (previously reported as 14.7 MtCO ₂ e)	4.3 MtCO ₂ e
Emissions intensity	The amount of carbon dioxide and equivalents emitted per million pounds of scheme investments: tCO ₂ e per £ million invested (production emissions – exported emissions + imported emissions)	Restated as 192.5 tCO ₂ e per £m invested (previously reported as 548.2 tCO ₂ e per £m invested)	168.3 tCO ₂ e per £m invested

About these metrics:

- Consistent with guidance from the Partnership for Carbon Accounting Financials (PCAF), we have adjusted the methodology for our sovereign emissions
 - Previously, the methodology calculated sovereign emissions as territorial (including land use, land use change and forestry – LULUCF) + imported emissions
 - For 2024, our methodology moves to PCAF’s recommendation of a consumption emissions-based approach. This methodology defines sovereign emissions more narrowly, removing export emissions from the sovereign inventory calculation
 - We have also updated our approach to apportioning sovereign emissions consistent with guidance from PCAF
- Previously, sovereign emissions were apportioned based on the proportion of a sovereign’s gross national debt, similar to corporate debt
 - However, this increased emissions intensity for countries with a smaller stock of government bonds. In the example provided by PCAF, Singapore and Hong Kong have similar emissions and Gross Domestic Product (GDP) characteristics, however Hong Kong had a much higher emissions intensity under this approach due to lower stock of outstanding sovereign bonds
 - In line with guidance from PCAF, we have moved to emissions apportionment on a GDP basis (purchasing power parity adjusted)
 - In the above table, we have restated the 2023 figure using the updated methodology

DC metrics excluding sovereign debt

Under The Department for Work and Pensions guidance, we are expected to report on funds that have over £100m in assets. The table below shows those funds. The reported metrics for funds that have over £100m in assets cover most of the DC part of scheme. The remaining DC funds have not been included in this year’s analysis on the basis that these funds are not expected to have a significant impact on the results and data is difficult to obtain. We will endeavour to include further DC metrics in future reports as far as reasonably practicable

Metric	Fund	Dec 2023			Dec 2024		
		Total NAV (£m)	Non-Sovereign NAV (£m)	Amount (tCO ₂ e)	Total NAV (£m)	Non-Sovereign NAV (£m)	Amount (tCO ₂ e)
Absolute emissions (Scopes 1 and 2, tCO ₂ e)	Growth	1,685	1,461	83,749	2,093	1,907	74,754
	Moderate Growth	346	275	16,279	441	367	17,747
	Cautious Growth	182	129	7,361	229	170	8,396
	Ethical Growth	109	101	2,996	134	129	6,804
	All Equity World	115	115	6,813	171	171	7,440
	Cash	127	–	–	154	–	–
Emissions intensity (Scopes 1 and 2, tCO ₂ e per £m invested)	Growth	1,685	1,461	57	2,093	1,907	39
	Moderate Growth	346	275	59	441	367	48
	Cautious Growth	182	129	57	229	170	49
	Ethical Growth	109	101	30	134	129	53
	All Equity World	115	115	59	171	171	44
	Cash	127	–	–	154	–	–

About these metrics:

- The increased emissions intensity of the Ethical Growth Fund is largely a result of replacing an external manager during the reporting period. The new strategy is more heavily invested in some relatively carbon intensive companies that are positively exposed to the climate transition. We recognise that some environmental activities can be high intensity but have an important role in enabling the transition, and we are therefore not concerned with this increase
- The metrics represent 100% of the assets for the reported DC funds. Where data is unavailable for these funds, we use estimated emissions or assume the uncovered part of the fund is the same as the covered part

Progress against our targets

Our ambition is for our investments to be net zero by 2050, if not before. Our interim net zero target is to reduce emissions of the non-sovereign assets in our DB portfolio by 25% by 2025, and by 50% by 2030 (relative to a 2019 baseline).

Our target implies that from our baseline year of 2019, we need to reduce our non-sovereign assets’ emissions intensity by between 4.7% and 6.1% each year on average. We expect to see greater reductions in later years as we:

- Improve the integration of climate data into our investment decision-making
- Realise the impact of our engagement with our long-term investments on achieving emissions reduction
- Incorporate climate change risks into our asset allocation

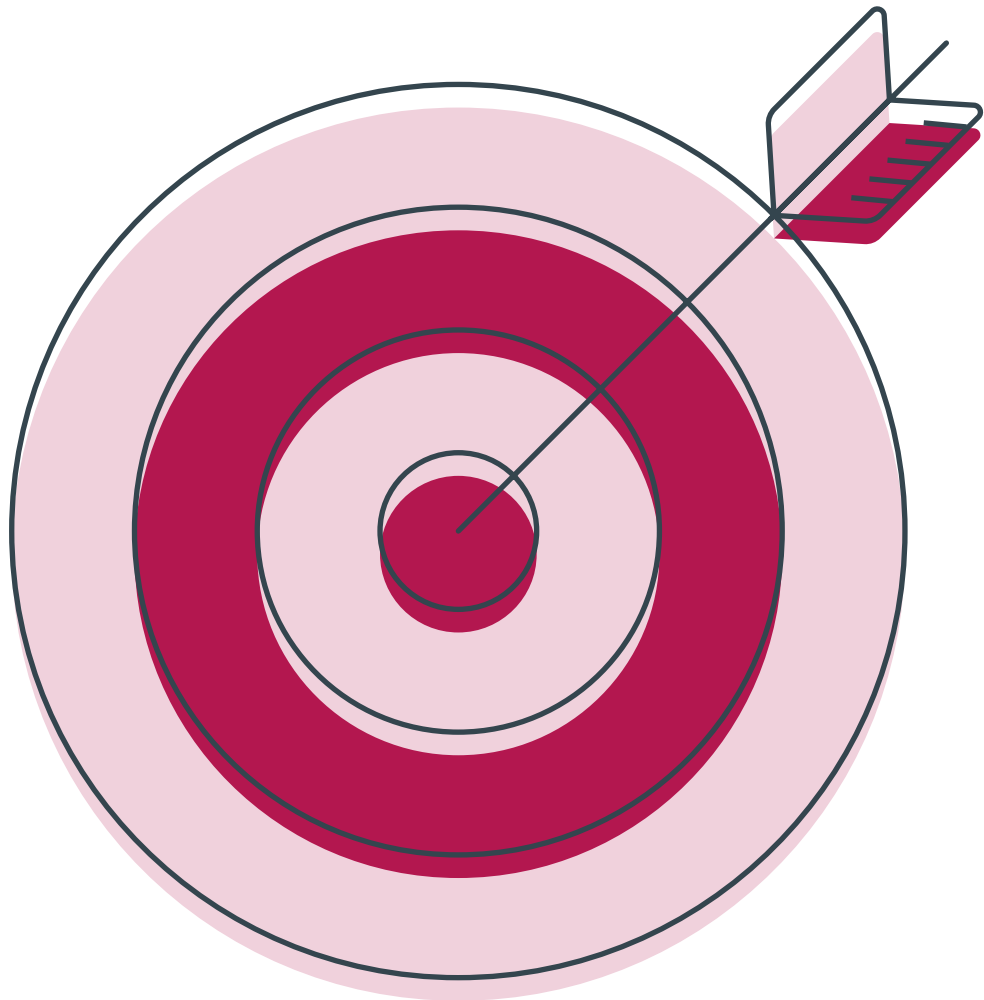
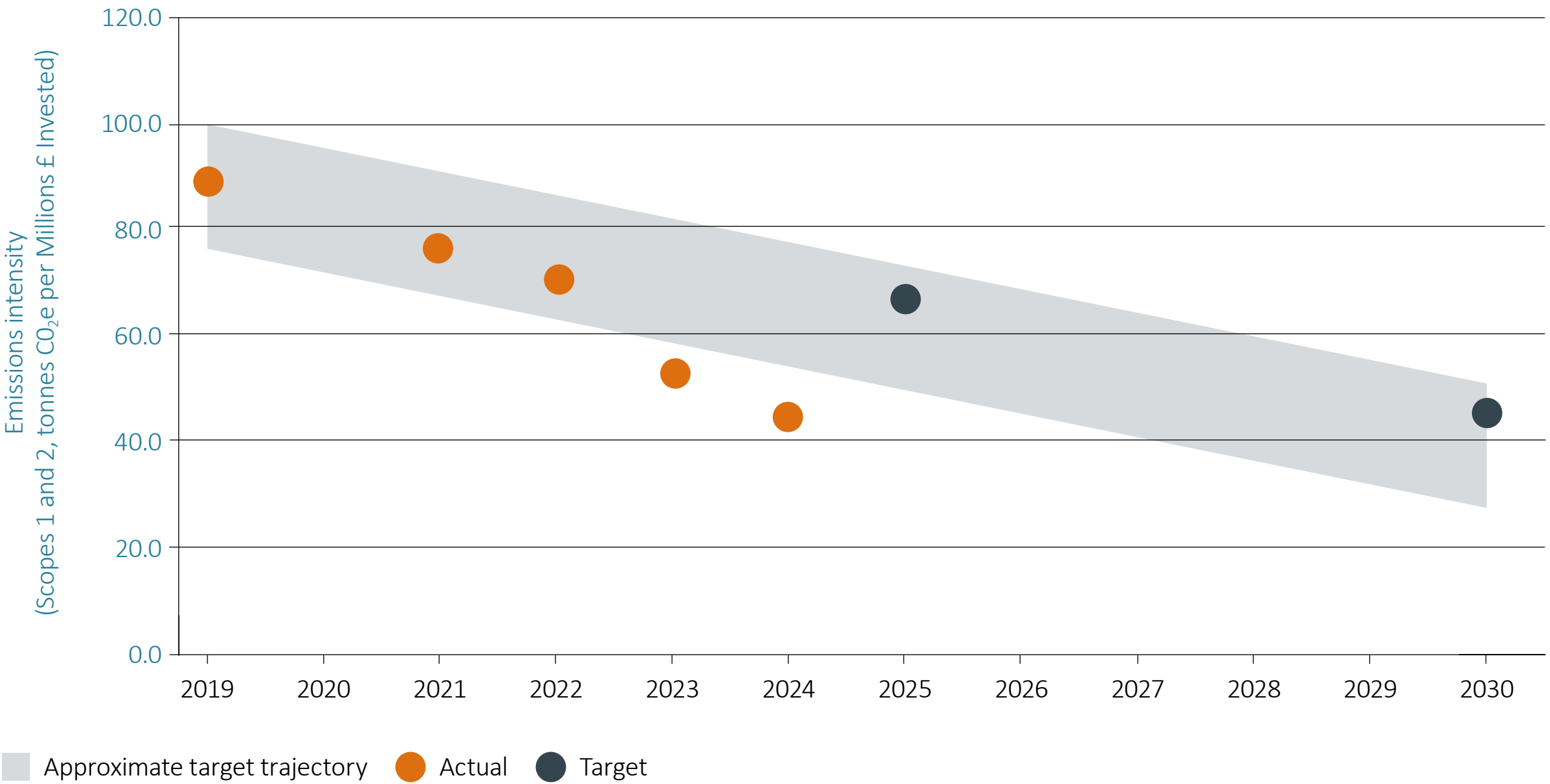
Emissions intensity of non-sovereign DB assets compared to 2019

2019 emissions intensity (Scopes 1 and 2)	2024 emissions intensity (Scopes 1 and 2)	Reduction from 2019 to 2024	Annualised reduction
89.5 tCO ₂ e per £m invested	44.2 tCO ₂ e per £m invested	51%	13%

In the context of continuing increases in global emissions, we treat the rapid pace of reduction in emissions from the scheme’s assets with caution. Lower emissions intensity for the portfolio does not reflect the risks from the climate transition, or from the physical risks from climate change. Similarly, emissions intensity does not reflect the extent to which the scheme is capturing opportunities from the transition, or its role in funding the transition. Furthermore, emissions intensity is calculated on a per £m EVIC basis and is therefore sensitive to market moves – rising asset prices will decrease emissions intensity, and similarly a fall in asset prices will increase emissions intensity.

We continue to explore opportunities to complement our existing metrics with additional metrics that capture broader climate-related risks and opportunities.

Figure 7: Emissions intensity vs targets



Our methodology, rationale and data sourcing

We use S&P Trucost to provide both carbon and broader climate data for a wide range of asset classes and geographies. We combine this with disclosures from company reports and direct communication with our third-party asset managers and unlisted or direct assets, where such data are available.

Data quality metric

Data quality for non-sovereign DB assets

Climate and carbon data quality and availability vary across companies, asset classes and markets. We have focused on collecting accurate and up-to-date emissions data for each underlying company or country. For investments in externally managed funds, and for which underlying holdings information is either unavailable or unsuitable, we have two options for collecting data:

- We take disclosures from the manager
- We estimate the intensity of the portfolio using average intensities for the industries and regions in which the portfolio is invested, based on available data

We have reported our emissions intensity and absolute emissions based on 100% of our non-sovereign DB assets by using estimated proxy data in place of reported data where it is not available. As noted in our data quality metric, however, we saw an increase in reported data in 2024, with emissions data for 69% of our assets coming from fully or partially reported sources.

Figure 8 shows a more detailed breakdown of the data sources by category. Industry guidance has been used when determining these.

Figure 8: Proportion of non-sovereign DB AUM by Scope 1 emissions source quality

Scope 1 emissions source quality	% of assets (2023)	% of assets (2024)
Verified reported emissions	18.4	12.1
Unverified reported emissions	27.2	21.9
Estimates derived from partially reported emissions	18.0	25.0
Estimates based on modelling of consumption and production	3.2	4.9
Estimates based on emissions per unit of value typical to that region and/or sector	21.2	19.6
Estimates based on emissions per unit of value typical to that portfolio	12.0	16.5

Note that the table above does not include reported data from our property investments or our Wellington Emerging Markets fixed income mandate. The first three categories in the table sum to 59%. This rises to 69% when including reported data from our property investments and our Wellington Emerging Markets fixed income mandate.

Verified: This information is classified as ‘verified’ if we receive it through S&P Trucost, meaning it has been through explicit quality assurance checks.

The proportion of verified emissions reduced in 2024 primarily due to more accurate categorisation of emissions sources.

Unverified: We classify this information as ‘unverified’ if we have taken the number from a company publication or disclosure but cannot be certain of its reliability, or if it was reported to us by one of our third-party managers.

For our DB sovereign debt investments, our service provider was able to provide data covering 99.9% of the assets, although we do not have a data quality rating for this portion of our assets.

Data quality for DC non-sovereign assets

The data quality metric is reported for DB non-sovereign assets only. DC funds are mostly externally managed and this year we received reported emissions data from managers of DC funds invested in non-sovereign assets.

Alignment metric

S&P Trucost methodology is used when determining portfolio alignment⁹. S&P Trucost calculates a company’s alignment to a given warming path based on its individual profile and the best data available for future emissions. These data include company targets, industry averages and more. For companies in carbon-intensive industries such as steel or cement production, S&P Trucost uses the Sectoral Decarbonisation Approach as recommended by the Science Based Targets Initiative. This more accurately reflects their anticipated impact on the path to a low-carbon economy. Starting with the S&P Trucost methodology for portfolio alignment, we then group assets into five broader temperature categories using an internal methodology.

We recognise that alignment metrics are highly sensitive to the methodology used to model them and include estimated inputs that themselves can be debated. But in the short to medium term, we believe that this metric can be a useful indicator of how successful our stewardship and engagement activities are in encouraging companies to plan for a low-carbon future. It is also more sensitive to a company’s specific decarbonisation trajectory, making allowances for the likely cost of decarbonisation and the need for new technologies to make that future a reality. We recognise that transition data and the methodologies to calculate them continue to develop and will be subject to change over time.

9 A link to the S&P Trucost methodology can be found here: <https://www.spglobal.com/esg/methodologies-behind-our-datasets>

Absolute emissions and intensity metrics

Data sourcing by asset class

S&P Trucost has established methodology for collecting published corporate climate data and estimating these data if they are not available.

For corporate assets we consider both our equity and debt investments when calculating emissions, enabling us to identify the highest emitters across the asset classes and markets in which we invest. Many of the highest emitters are energy companies in our Global Emerging Markets portfolio.

For some asset classes we use different data sources to supplement S&P Trucost. These are described below.

Data sourcing by asset class: Private market direct assets

For internally managed private market assets we use company reported data and responses to our ESG surveys. Where data is not available, we calculate a figure using proxy emissions data using S&P Trucost and public market indices.

Data sourcing by asset class: Property

Our property investments are mostly direct investments in offices, retail and industrial buildings across the UK. Emissions data for our real estate investments are provided by EVORA, a leading sustainability consultancy focused on the property sector, who use the location-based approach to calculate Scope 2 emissions.

Real estate presents practical challenges in assessing emissions. The most significant reporting challenge is working out who is responsible for emissions between the landlord and tenant, or between an owner and a mortgage provider (or debt provider). This is a particular problem for the Full Repairing and Insuring leases commonly used in the sector. In these leases, tenants have explicit and sole responsibility for energy usage and management, with building owners tending to have limited, if any, Scope 1 and 2 emissions. We therefore consider Full Repairing and Insuring leases as Scope 3 emissions in our reporting.

While this may be an accurate reflection of responsibilities, it may lack credibility with stakeholders who do not accept that the numbers reported for the landlord’s or owner’s emissions are a fair characterisation of their emissions. It may also not reflect accurately the carbon and climate-related risk associated with owning a building. However, reporting on total building emissions does not account for tenants’ responsibilities for their emissions (that is, it introduces an element of double counting).

Data sourcing by asset class: Externally managed funds

For externally managed assets across both private and public markets we take reported emissions data from the managers where it is available. While we acknowledge there may be slightly differing methodologies across different managers, we believe this represents the best available and most consistent way to source the data. Where data are not reported by the manager, but the underlying holdings are incorporated into our systems, we calculate a figure using either company-level data or proxy emissions data using S&P Trucost and public market indices.

For externally managed assets in private markets where a manager has not disclosed the emissions intensity of the fund, but we know the underlying portfolio companies and their region and industry classifications, we use the average of those regional industry carbon emissions intensities, weighted by their aggregate exposure in GBP. The regional industry emissions intensities are calculated using the MSCI All Country World Index composition.

Given its size and relatively high emissions intensity when compared with other external managers, the emissions from our Wellington Emerging Markets fixed income mandate have been calculated on a bottom-up basis using data from S&P Trucost for 2024, rather than using a number reported by the external manager.

Data sourcing by asset class: Sovereign debt

We take country emissions and economic data from S&P Trucost to calculate the emissions of our sovereign debt investments.

As described earlier in this section, we have adjusted our sovereign emissions data methodology, consistent with the guidance from PCAF, to use the full consumption-based emissions approach and attribute them using Purchasing Power Parity (PPP)-adjusted GDP. We have recalculated emissions for last year to allow for a meaningful year-over-year comparison.

Data limitations and validation

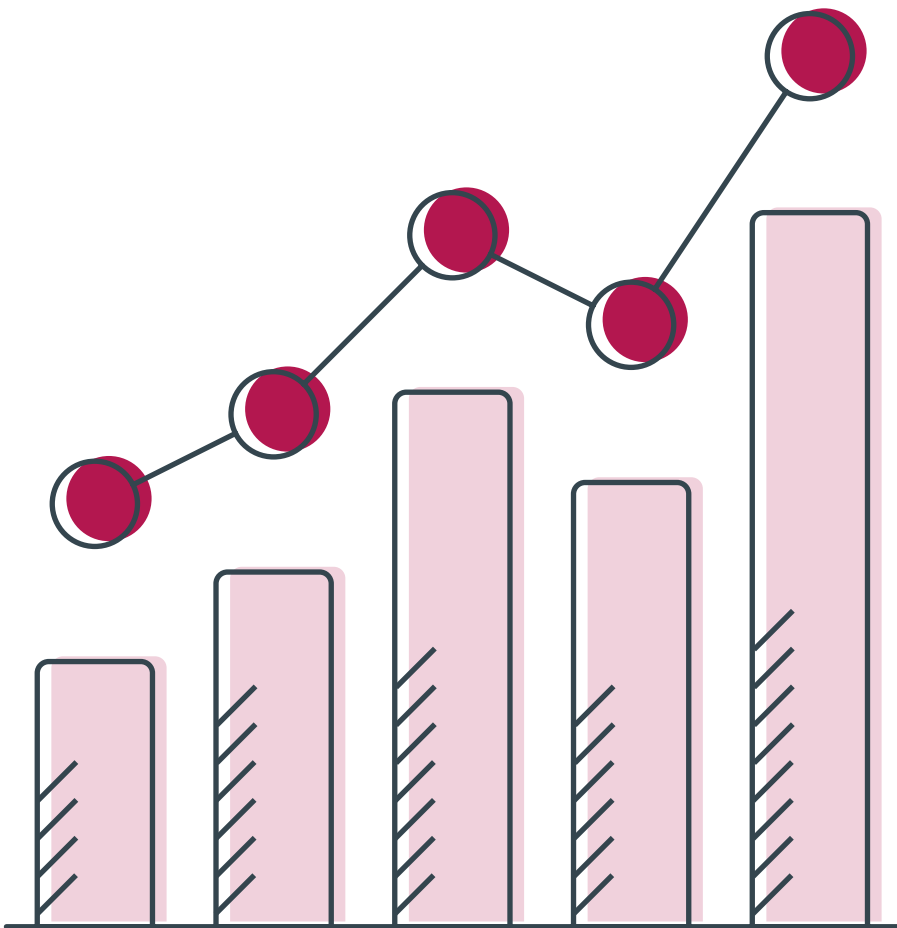
Data limitations

The availability and quality of data vary across, and within, asset classes. If the availability and quality of data improves in future years, we may need to revisit and restate previously reported data.

Data validation processes

We have defined a new formal data validation process for TCFD metrics which will improve efficiency, quality, confidence and auditability in our reported metrics.

Climate reporting data are now formally integrated into our investment data infrastructure, enabling more efficient analysis and reporting. To mitigate some of the challenges posed by the limitations on quality, transparency and volume of data being processed, our TCFD data has been through appropriate levels of internal review and validation to assess completeness and accuracy to the extent possible.



Appendix: Statutory reporting requirements

This section maps this TCFD Report to the Department of Work and Pensions’ (DWP) statutory guidance: **Governance and reporting of climate change risk: guidance for trustees of occupational schemes.**

Governance

DWP reporting requirement	Section of report	Page number
33. Trustees must describe in their TCFD report:		
How they maintain oversight of climate-related risks and opportunities which are relevant to the scheme	The scheme trustee	7–8
The roles of those undertaking scheme governance activities, in identifying, assessing and managing climate-related risks and opportunities relevant to those activities	The scheme trustee	7–8
	USS Investment Management Limited	8–9
The processes the trustees have established to satisfy themselves that those undertaking scheme governance activities take adequate steps to identify, assess and manage those risks and opportunities	Trustee Board and Investment Committee oversight	8
The role of those advising or assisting the trustees with scheme governance activities	External advisors – actuarial, investment and covenant advisers	9
The processes the trustees have established to satisfy themselves that the person advising or assisting takes adequate steps to identify and assess any climate-related risks and opportunities which are relevant to the matters on which they are advising or assisting	External advisors – actuarial, investment and covenant advisers	9
34. To help contextualise these disclosures, trustees should concisely describe:		
How the board and any relevant sub-committees are informed about, assess and manage climate-related risks and opportunities and the frequency at which these discussions take place	Trustee Board and Investment Committee oversight	8
Whether they questioned and, where appropriate, challenged the information provided to them by others undertaking governance activities – or advising and assisting with governance	The scheme trustee	7
The rationale for the time and resources they spent on the governance of climate-related risks and opportunities	Strategy: Our approach	10
35. Trustees should also concisely describe, in relation to those who undertake governance activities, or advise or assist with governance of the scheme:		
The kind of information provided to them by those persons about their consideration of climate-related risks and opportunities faced by the scheme	Trustee Board and Investment Committee oversight	8

Governance continued

DWP reporting requirement	Section of report	Page number
The frequency with which this information is provided	Trustee Board and Investment Committee oversight	8
36. Trustees should describe the training opportunities they provided for their employees in relation to climate change risks and opportunities. Where trustees identified skills gaps, they may also describe whether they encourage external advisers to provide training opportunities	Training	9
37. Trustees may wish to provide an organogram or structural diagram in their TCFD report, showing which groups/individual roles have responsibilities for governance of climate-related risks and opportunities	USS Group corporate governance structure	8

Strategy

DWP reporting requirement	Section of report	Page number
92. Trustees must describe in their TCFD report:		
The time periods which the trustees have determined should comprise the short term, medium term and long term	Time horizons	11
The climate-related risks and opportunities relevant to the scheme over the time periods that the trustees have identified and the impact of these on the scheme’s investment strategy and, where the scheme has a funding strategy, the funding strategy	Climate-related risks and opportunities	13
The most recent scenarios the trustees have used in their scenario analysis	Scenario analysis	11–12
	Scenario modelling	36–37
	Narratives – No Time To Lose scenarios	38
The potential impacts on the scheme’s assets and liabilities which the trustees have identified in those scenarios and, if the trustees have not been able to obtain data to identify the potential impacts for all of the assets of the scheme, why this is the case	Scenario analysis impacts	14–16
The resilience of the scheme’s investment strategy and, where the scheme has a funding strategy, the funding strategy, in the most recent scenarios the trustees have analysed	Scenario analysis impacts	14–16
Where trustees have concluded that it is not necessary to undertake new scenario analysis outside the mandatory cycle, the reasons for this determination	–	–
93. Trustees should also describe in their TCFD report:		
Their reasons for choosing the scenarios they have used	Scenario analysis	11–12
	Scenario modelling	36–37
The key assumptions for the scenarios used and the key limitations of the modelling (for example, material simplifications or known under/over estimations)	Modelling limitations	13
	Scenario modelling	36–37
Any issues with the data or its analysis which have limited the comprehensiveness of their assessment	Modelling limitations	13
94. Trustees may include information in their TCFD report on any other aspects of the assessment of their investment strategy and, if they have one, funding strategy and scenario analysis that they consider would be helpful to disclose	Scenario analysis deep dive	36–45

Risk management

DWP reporting requirement	Section of report	Page number
113. Trustees must describe in their TCFD report the processes they have established for identifying, assessing and managing climate-related risks in relation to the scheme, and how the processes are integrated within the trustees’ overall risk management of the scheme	Climate-related risk in our risk management processes	17–20
114. The report should also include concise information on the following:		
The risk tools the trustees used and the outputs/outcomes of using those particular tools	Climate-related risk in our risk management processes	17–20
How the trustees have identified, assessed and managed both transition and physical risks for the scheme	Climate-related risk in our risk management processes	17–20
How the trustees’ assessment of climate-related risks has impacted the scheme’s prioritisation and management of risks which pose the most significant potential for loss and are most likely to occur	Climate-related risk in our risk management processes	17–20
115. Trustees should include information on how, if at all, they have used stewardship to help manage climate-related risks to the scheme	Using stewardship to help manage climate-related risks	21–22
116. Disclosing information about how climate-related opportunities are identified, assessed and managed is encouraged as this will add further insights for members and others into the scheme’s overall approach to climate-related risk	Managing climate-related risk in the scheme’s actuarial valuation process	20
	Managing climate-related risk at asset level	23

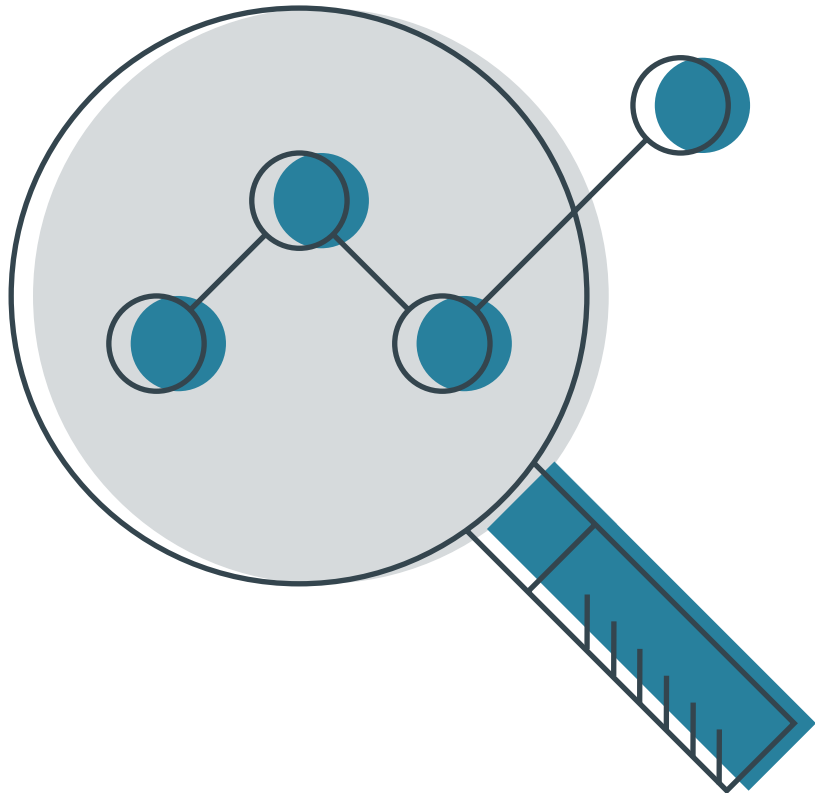
Metrics

DWP reporting requirement	Section of report	Page number
175. Trustees must describe in their TCFD report the metrics which they have calculated – absolute emissions metric, emissions intensity metric, portfolio alignment metric and an additional climate change metric. If they have been unable to obtain data to calculate the metrics for all of the assets of their scheme, they must explain why this is the case	Our four metrics	24
176. When disclosing their portfolio alignment metric trustees should describe the key components of the methodology (for example, key judgements, assumptions, data inputs and where relevant how the chosen methodology accounts for data gaps) used to calculate their chosen metric	Alignment metric	28
177. If the trustees have chosen to use a metric which is not recommended in this Guidance, they should explain why	–	–
178. For all metrics, trustees should concisely explain their methodologies and those of any asset managers or third-party service providers used, and their rationale for taking the approach that has been adopted	Our methodology, rationale and data sourcing	28–29
179. When reporting total GHG emissions and Carbon Footprint, trustees should report the proportion of assets for which data was available. Trustees should concisely explain where data was estimated and should indicate any assumptions that have been made that could impact significantly on the results. Where they have data of uncertain quality, trustees should again concisely explain this	DB metrics excluding sovereign debt	25
	DC metrics excluding sovereign debt	26
	Our methodology, rationale and data sourcing	28–29
180. Where trustees report metrics on only a proportion of the portfolio, they should explain the proportion on which they are reporting	DB metrics excluding sovereign debt	25
	DC metrics excluding sovereign debt	26
	Our methodology, rationale and data sourcing	28–29

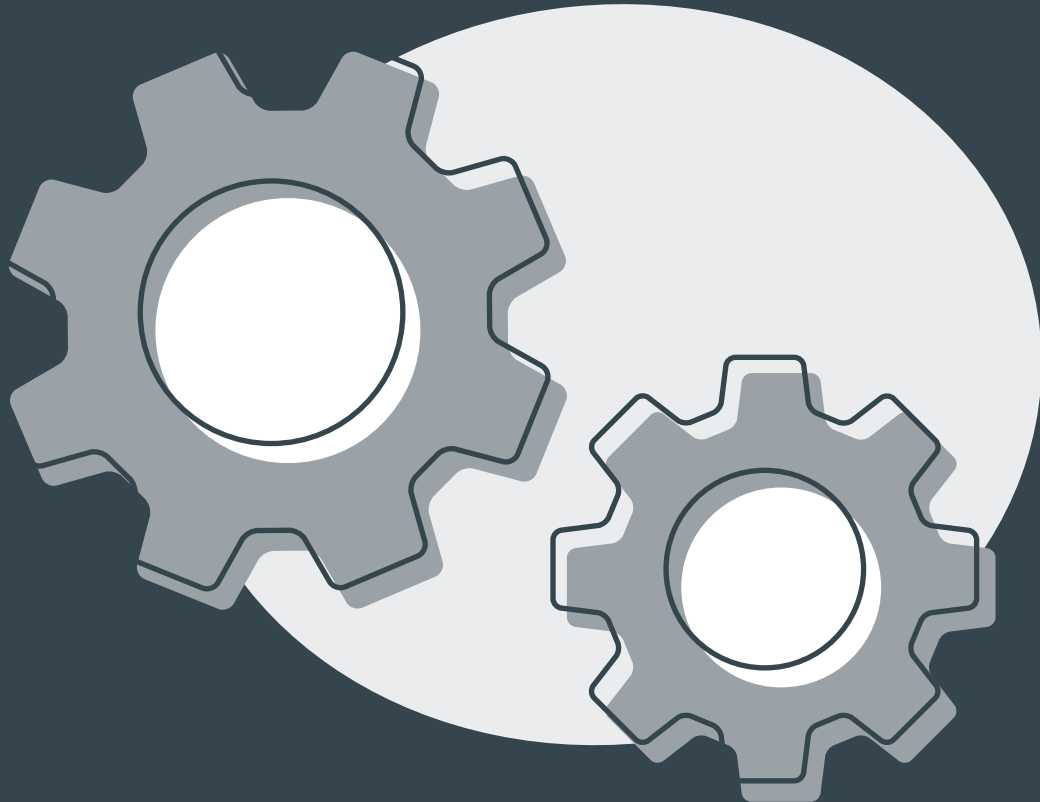
Metrics continued

DWP reporting requirement	Section of report	Page number
181. When reporting total GHG emissions and Carbon Footprint, trustees should set out the Scope 1 and Scope 2 emissions of assets separately from the Scope 3 emissions of assets for each DB section and each popular DC arrangement. Trustees may additionally report the Scope 1 and Scope 2 emissions of assets separately. Emissions should be reported in amount of CO₂ equivalent (CO₂e)	DB metrics excluding sovereign debt	25
	DC metrics excluding sovereign debt	26
182. If trustees believe that it is not meaningful, in relation to any metric, to aggregate data across certain asset classes, they should not do so, but should instead report at the most aggregated level which remains meaningful (for example at asset class level). If this approach is necessary, they should also report the proportions of the scheme assets associated with each reported metric (in the above example, the proportion of the portfolio represented by each asset class)	DB metrics excluding sovereign debt	25
	DC metrics excluding sovereign debt	26
183. Trustees may choose to disclose some or all of their chosen metrics against a relevant benchmark to identify the relative performance of the portfolio	–	–
193. Trustees must describe in their TCFD report the target they have set, and the performance of the scheme against the target	Progress against our targets	27
194. Trustees should report concisely on the steps they are taking to achieve the target or targets	Strategy: Our approach	10
	Using stewardship to help manage climate-related risks	21–22
	Managing climate-related risks at asset level	23
195. Trustees should provide a concise description of the methodology used to measure performance against the target or targets, including any estimations relied upon in measuring progress	Our methodology, rationale and data sourcing	28–29

DWP reporting requirement	Section of report	Page number
196. Where trustees have replaced a target, they should briefly explain why. Similarly, where a target has been missed, trustees should offer a brief explanation. Such explanations could help savers and others understand the trustees’ conclusions on the events or circumstances that made the target unachievable or not in members’ interests	–	–



Glossary



Absolute emissions	Absolute amount of carbon dioxide (CO ₂) and equivalents emitted by USS’s investments, expressed in million tonnes of carbon dioxide equivalents (tCO ₂ e)
AUM	Assets under management. An amount of money managed or invested.
Carbon dioxide equivalent (CO ₂ e)	Metric used to compare the emissions from various greenhouse gases based on their global-warming potential.
Climate Action 100+	Climate Action 100+ is an investor-led initiative to ensure the world’s largest corporate greenhouse gas emitters take appropriate action on climate change in order to mitigate financial risk and to maximize the long-term value of assets.
Climate change	Climate change is an urgent issue of global significance. The scientific consensus is that carbon dioxide and other greenhouse gas emissions, caused by human activity, are contributing to changes in the atmosphere that will cause significant changes in global temperatures.
Climate-related risk	The risk of material financial impact from climate change, where asset values are impacted by economic transition in response to climate change and by physical risk of damage to assets from extreme climate and weather events.
Direct emissions	Direct (greenhouse gas) emissions are produced from sources owned, produced, and controlled by a company or organisation.
Defined benefit (DB)	An employer-sponsored retirement plan where employee benefits are computed using a formula that considers several factors, such as length of employment and salary history.
Defined contribution (DC)	A plan in which members and employers contribute a fixed amount or a percentage of pay which is invested and the proceeds used to buy a pension and/or other benefits at retirement.
Emissions intensity	The amount of carbon dioxide and equivalents emitted per million pounds of scheme investments.
ESG	Environment, social and governance.
Fixed income	Means an investment approach focused on preservation of capital and income. It typically includes investments like government and corporate bonds and can offer a lower risk steady stream of income.

Glossary continued

Greenhouse gases (GHGs)	The six gases listed in the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride. These contribute to the greenhouse effect and climate change.	Scope 3 emissions	Indirect emissions (not included in Scope 2) that occur in the value chain of an organisation, including both upstream and downstream emissions. Scope 3 emissions can include categories such as business travel, waste disposal and use of sold products.
Indirect emissions	Indirect emissions are emissions which are a consequence of a company’s or organisation’s activities but are owned or controlled by another entity.	Sovereign assets/non-sovereign assets	In our TCFD Report we classify the assets as follows: sovereign and non-sovereign. Non-sovereign assets include equity and debt issued by corporations, real estate investments, plus all other securities not directly issued by a national government. It does not include any synthetic derivative exposures.
Members	Individuals who are members of the Universities Superannuation Scheme who have accrued benefits and/or on whose behalf contributions have been made during their current or previous employment by a scheme employer.		
Net zero	Net zero refers to a state where greenhouse gases from human activities added to the atmosphere are balanced by their removal from the atmosphere.		
Net zero ambition	We have set an ambition for our investments to be net zero by 2050, if not before. Our interim net zero target is to reduce the emissions of the non-sovereign DB assets in our portfolio by 25% by 2025, and by 50% by 2030 (relative to a 2019 baseline).		
Physical risks	Risks that relate to the physical impacts of a changing climate, such as the increase in frequency and severity of extreme weather events and temperature effects on productivity.		
Private markets	Financial companies involved in private rather than public markets are part of the capital market. They include investment banks, private equity, and venture capital firms in contrast to broker-dealers and public exchanges.		
Public markets	Refers to securities available on an exchange or an over-the-counter market.		
Science Based Target initiative (SBTi)	An organisation that develops standards and verifies emissions reductions targets, in order to limit global warming in-line with the Paris Agreement.		
Scope 1 emissions	Direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organisation.		
Scope 2 emissions	Indirect GHG emissions from the generation of purchased energy for example electricity, steam, heat or cooling.		

Scenario analysis deep dive

In this section we provide further detail on the scenario analysis undertaken. We include a description of the process, further description of the scenarios and the modelling outputs.

- 36 Scenario modelling
- 38 Narratives – No Time To Lose scenarios
- 39 Transition risk
- 44 Physical risk
- 45 Scenario analysis conclusions

Scenario modelling

A brief recap of our previous climate scenario analysis

In our 2021/2022 TCFD Report, we employed traditional climate models for scenario analysis. This approach relied on standardised methods based on long-run climate pathways, which often underestimates climate impacts due to simplifying assumptions and a focus on long-term horizons which can compound uncertainty. These models typically do not account for real-world dynamics and interactions between climate and other macro drivers.

Transition risks were assessed through equilibrium models focused on cost-benefit analysis, with adjustments made primarily through carbon pricing leading to Gross Domestic Product (GDP) losses. Inflation was modelled indirectly through the assumed reaction function of central banks.

Physical risks were derived from simplistic relationships between temperature and GDP, potentially underestimating the risks and failing to explicitly consider the likelihood of climate hazards in different locations or long-term uncertainties related to tipping points.

We identified the need to update and enhance our scenario analysis to better inform investment decisions. In 2023 we started working with the University of Exeter to create a range of climate scenarios to better reflect real-world risks and opportunities. During the year we extended our work to update the scenarios to incorporate both transition and physical risk assessments.

2025 scenario analysis approach

We use bespoke scenarios that consider interactions between the climate transition and other macro drivers such as geopolitics and economic cycles. This approach allows for a wide range of potential outcomes by incorporating plausible real-world dynamics and focusing on shorter horizons to limit uncertainty.

A non-equilibrium modelling framework explores the impact of a broad set of policies and technological developments. Narratives on macro, technological and geopolitical context are used to calibrate model assumptions. The model output enables us to assess the impact of alternative narratives not only on macro variables like GDP or inflation, but also on greenhouse gas (GHG) emissions and the energy system at a granular level (for example fossil fuel demand or fuel mix in different countries).

Physical risks are primarily derived by examining the likelihood and potential economic costs of climate-related hazards across different locations, with an initial focus on short-term risks that are already ‘baked-in’ and unlikely to be affected by future emissions trajectories or tipping points.

Our approach provides a more dynamic and realistic assessment of climate impacts by considering a broader range of factors and shorter-time horizons, which we believe is a significant improvement on our previous scenario analysis.

We aim to adopt a forward-thinking approach deploying an innovative methodology for addressing transition and physical risks. Most importantly, we believe our approach better equips us to navigate the complexity of climate-related issues within our investment decision-making.

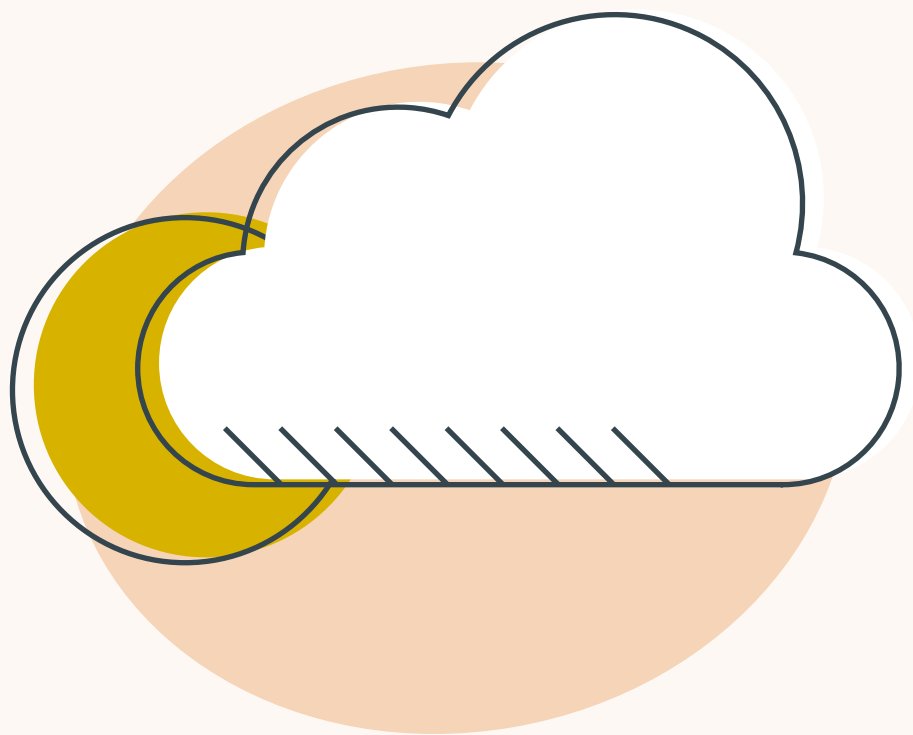


Figure 9: Comparison of climate models

Traditional climate models	Narratives	Transition Risk	Physical Risk
	<ul style="list-style-type: none">Standardised approach based on long run climate pathwaysLimited attempt to consider real-world dynamics and interaction between climate and other macro driversOften underestimates climate impacts due to simplifying assumptions and long-term horizons	<ul style="list-style-type: none">Equilibrium models look at transition in terms of cost-benefit analysisAdjustments made through carbon pricing rather than broader set of policiesRegulatory intervention (e.g. carbon pricing) leads to GDP drag. Inflation backed out from GDP and assumed central banks’ action	<ul style="list-style-type: none">Derives damage functions from simplistic relationship between temperature and GDPsDoes not explicitly consider likelihood of climate hazards in different locationsDoes not consider long horizon uncertainty on tipping points
	<ul style="list-style-type: none">✓ Bespoke scenarios consider interaction between climate transition and other macro drivers✓ Plausible real-world dynamics lead to wide range of potential outcomes✓ Shorter horizon to limit uncertainty	<ul style="list-style-type: none">✓ Non-equilibrium models allow for a broad set of policy and technology developments✓ Narratives on broader macro and geopolitical context are translated into model inputs✓ GDP impact of policies supporting the transition can be positive or negative. Impact of policies on inflation is also modelled	<ul style="list-style-type: none">✓ Physical risks are assessed looking at the likelihood and potential economic costs of climate-related hazards across different locations✓ Initial focus on short-term risks already ‘baked-in’ independent of future emissions trajectory and unlikely to be affected by tipping points

Narratives – No Time To Lose scenarios

In the Strategy section, we outline the potential impacts to the scheme of the updated the No Time To Lose scenarios. Here we provide a more detailed description of the scenarios.

R20

Roaring 20s – policies and markets align

- Strong climate policies (led by China and Europe) and technology advancements drive economic growth
- Easing geopolitical tensions, particularly with China, support global trade
- Investments in renewables and infrastructure boost sustainability and economic stability

GP

Green Phoenix – market-driven, while policy lags

- Geopolitical tensions disrupt supply chains, hindering international cooperation
- Governments struggle to meet climate goals, but market forces drive renewable investments
- Private sector plays a key role in pushing green initiatives forward despite weak policy support

BB

Boom and Bust – policy steps up after boom bursts

- Rapid growth fuelled by tech advancements and aggressive fiscal policies leads to economic imbalance
- A major recession follows, driven by inflation, policy conflicts and financial instability
- Weak recovery prioritises traditional energy over renewables due to cost advantages

M

Meltdown – policy failures compound weak growth

- Aggressive US fiscal policies and trade wars cause high inflation, instability and slow growth
- Governments backtrack on climate commitments. Geopolitical tensions, and economic fragmentation disrupt supply chains
- Energy security becomes a significant risk in Europe

Transition risk

Impacts on financial and macro variables

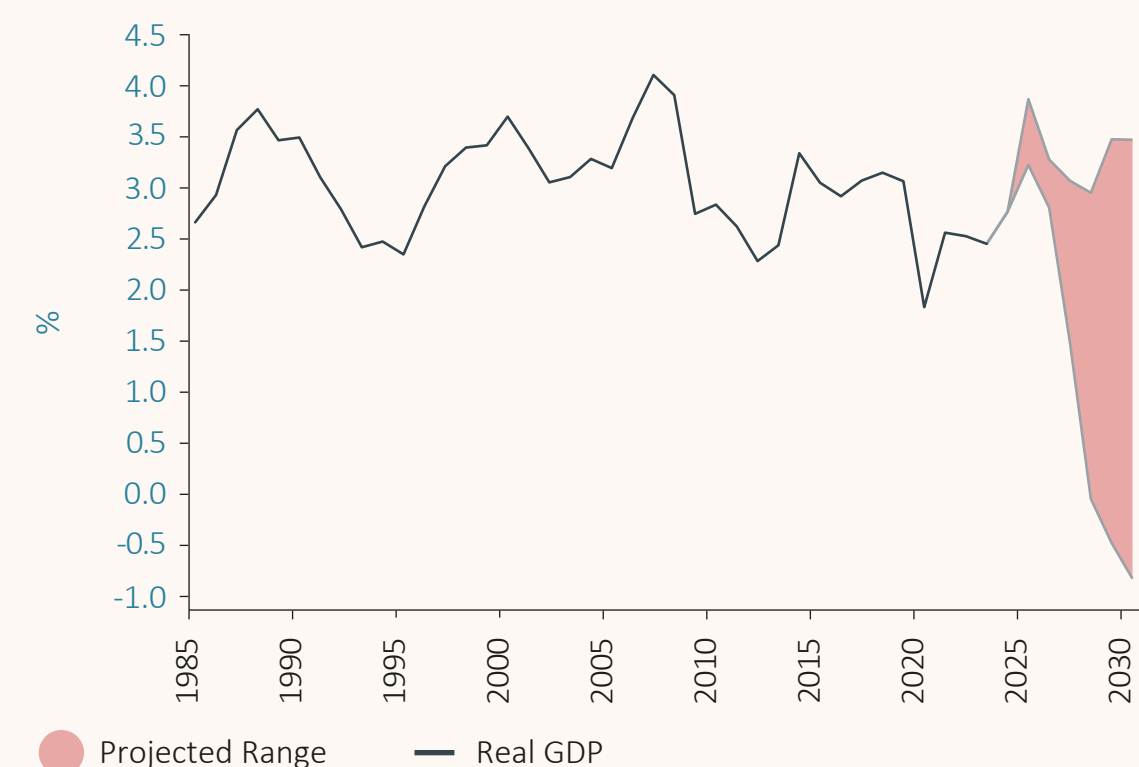
Our objective is to assess the potential implications of a plausible set of alternative scenarios. The climate transition is one of several macro themes that could affect macroeconomic and financial market variables impacting the value of our investments.

In collaboration with Cambridge Econometrics, we have used a global macro-econometric non-equilibrium model to assess the implications of alternative scenario narratives for macroeconomic variables like GDP and inflation. Our analysis has shown that the No Time To Lose scenarios can lead to a wide range of potential outcomes, even over a relatively short-time horizon, highlighting the complexities of the future landscape.

The No Time To Lose scenarios provide a comprehensive framework for understanding the dynamics between the importance of considering shorter-term geopolitical risks and financial market volatility in macro variables, rather than relying solely on long-term averages.

Figure 10: Expected impacts on GDP growth

World Real GDP – Rolling 5-Year



These scenarios indicate a broad spectrum of potential GDP outcomes. In optimistic scenarios, technological advancements could drive an upturn in global growth comparable to the late 1990s and mid-2000s. Conversely, pessimistic scenarios, such as Meltdown, might lead to downturns and negative GDP growth. This variability is influenced by factors including escalating trade wars, policy uncertainty and the enduring impacts of major geopolitical events.

R20

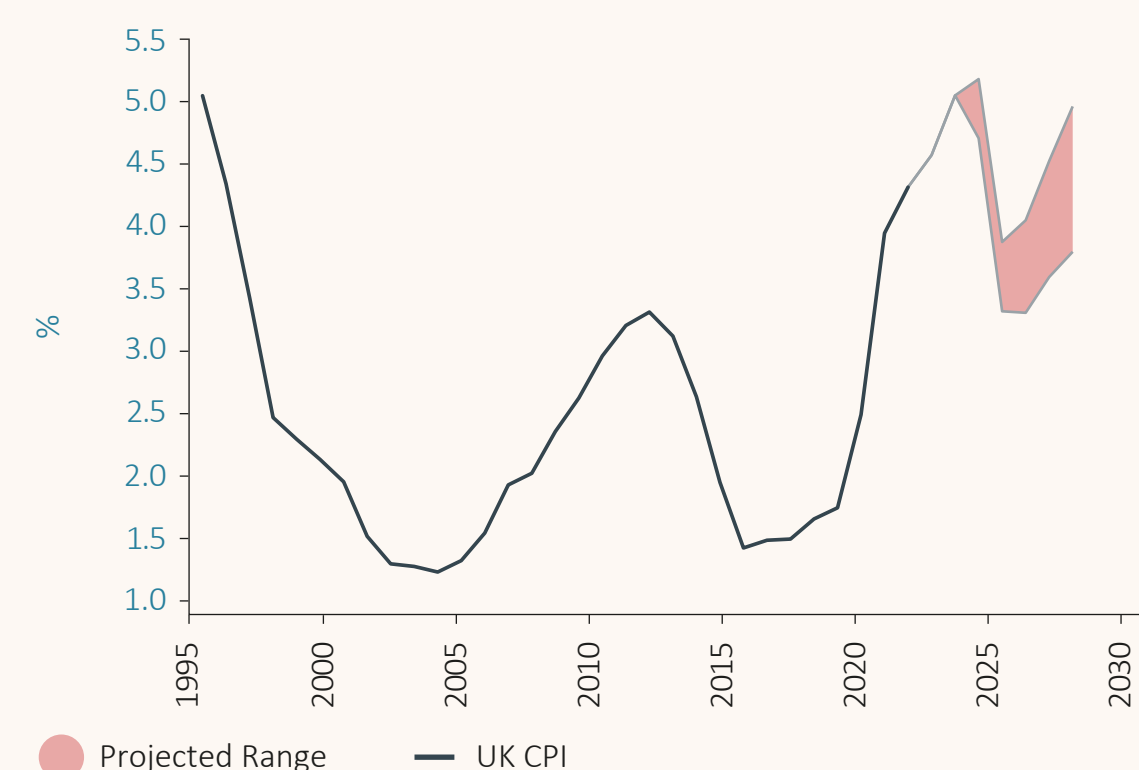
Over the next five years, significant technological advancements drive up transition costs due to higher demand for materials and resources alongside strong GDP growth.

GP

Inflation is likely to rise due to supply shocks from fragmentation, increased investment in green technologies, higher material costs, regulatory changes, and geopolitical factors alongside strong economic growth.

Figure 11: Expected impacts on inflation

UK CPI Inflation – Rolling 5-Year



Inflation remains our biggest concern, posing risks across all scenarios. Current projections suggest a higher inflation regime compared to the 2010s. Forecasts indicate the potential for sustained high inflation with a volatile path, driven by economic policies and geopolitical tensions.

The No Time To Lose scenarios provide a comprehensive framework for understanding the dynamics between the importance of considering shorter-term geopolitical risks and financial market volatility in macro variables, rather than relying solely on long-term averages.

BB

Inflation rises due to economic volatility, with rapid growth in the boom phase driving up demand and prices, followed by supply chain disruptions and cost increases during the bust phase, leading to GDP contraction.

M

Inflation rates could rise due to economic instability, supply chain disruptions and tariffs, leading to negative GDP growth and a severe economic shock followed by modest recovery.

Expected impacts on equity performance

Using GDP and inflation forecasts, we have employed both qualitative and quantitative methods to assess the potential range of returns for equities and government bonds over the next five years up to 2030.

Real yields are projected to remain positive across all scenarios, driven by greater macroeconomic uncertainty and a ‘new normal’ of higher interest rates.

Figures 12 and 13 illustrate a stylised path of global equity returns for MSCI World. Figure 12 shows year-on-year returns, while Figure 13 depicts cumulative returns over time. For developed market equities, returns are expected to vary significantly, with the lowest returns anticipated in the Meltdown scenario and the highest in the Roaring 20s scenario.

Figure 12: Equity performance

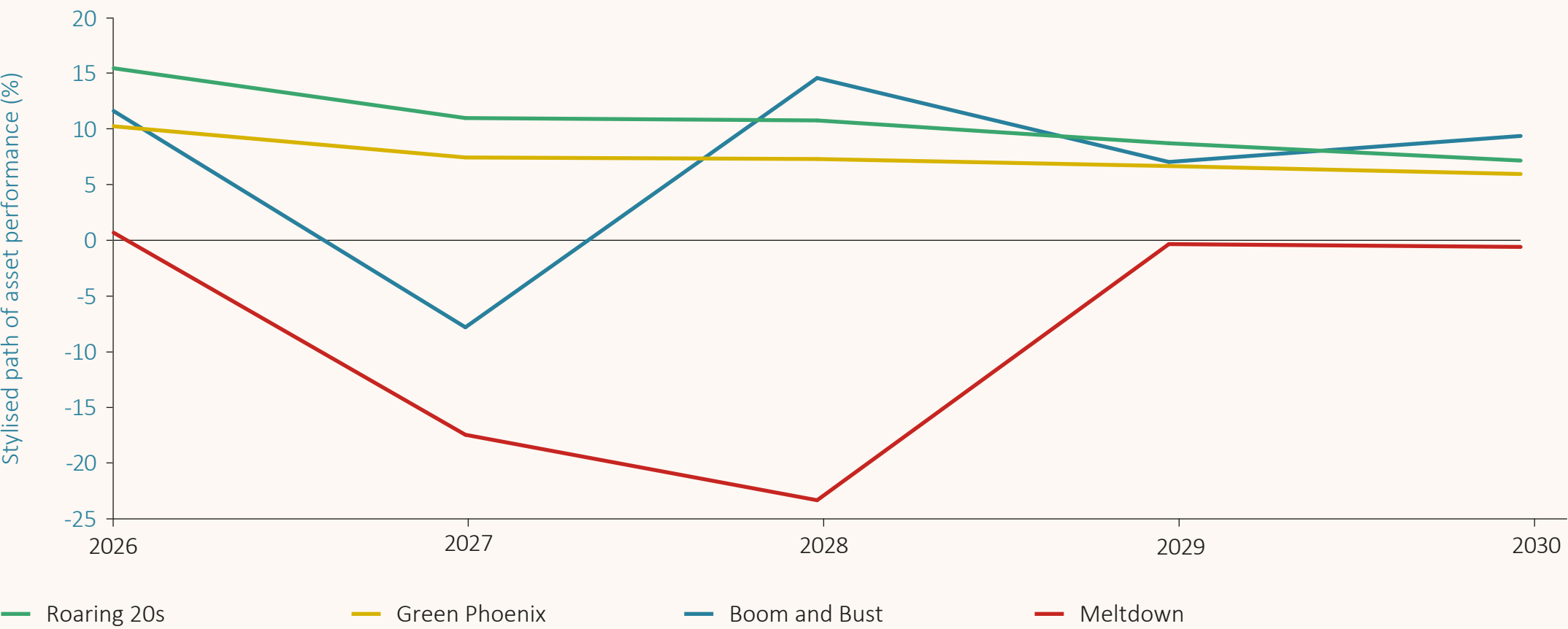
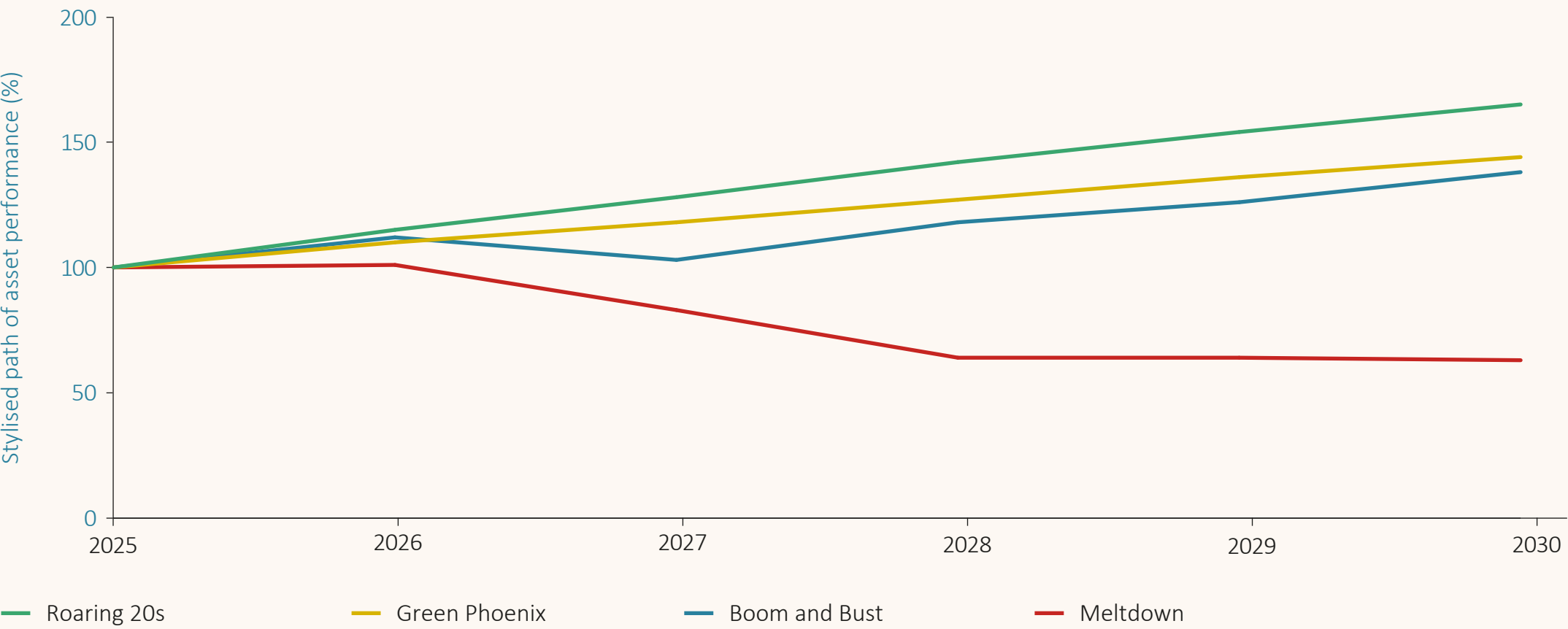


Figure 13: Cumulative equity performance



R20

Strong and consistent equity return profile reflecting economic prosperity.

GP

Fragmentation sparks competition and drives technological advancements improving equity performance.

BB

Volatile and cyclical performance with periods of growth followed by downturns.

M

Significant and sustained decline in equity values indicating prolonged economic distress.

Energy mix

Roaring 20s has insufficient cuts for 1.5 degrees

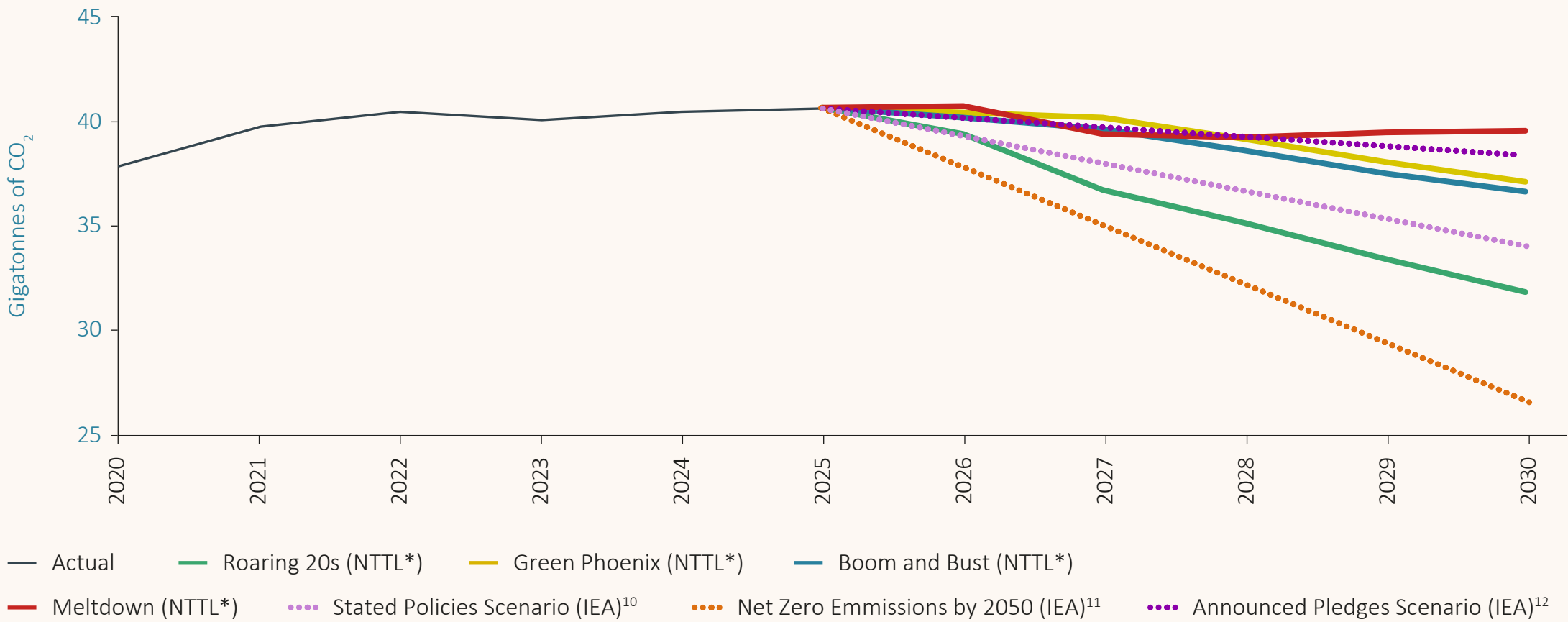
Figure 14 illustrates global emissions projections to 2030 and highlights the ambitious nature of achieving net zero by 2050. Even the most optimistic scenario, which envisages favourable drivers and rapid decarbonisation, falls short of the necessary progress to fully meet net zero targets by the middle of the century. This emphasises the immense challenge ahead and the need for continued innovation, robust policies and collective action to bridge the gap.

Complex forces shaping future oil demand

Oil demand projections vary widely across different scenarios. In a Meltdown scenario weak GDP growth leads to reduced oil demand, while in a Roaring 20s scenario the rapid transition to alternative energy sources drives a decline.

The International Energy Agency’s (IEA) Stated Policies Scenario¹⁰, which reflects current official policies and measures and is being implemented by governments, provides a practical near-term outlook for the softening of oil demand. Our No Time To Lose scenarios align with announced pledges but remain higher than the net zero projections by the [International Energy Agency](#) (IEA) and [Organization of Petroleum Exporting Countries](#) (OPEC).

Figure 14: Global CO₂ emissions

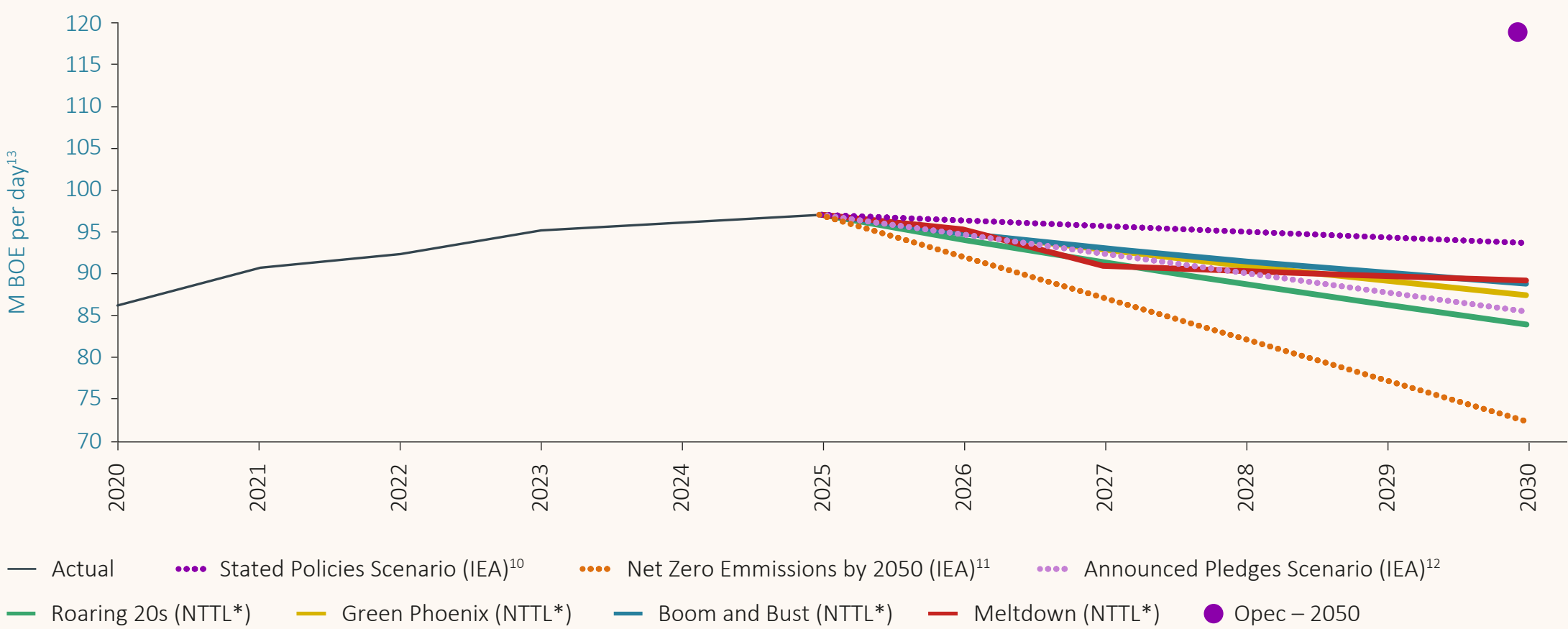


A 5–10% reduction in oil demand by 2030 may seem inconsistent with historical trends, which have shown a steady increase over the past 50 years, and prevailing industry expectations such as those from OPEC. However, the analysis indicates that this reduction could be achieved due to several assumptions:

- The cost curve for renewables has declined faster than anticipated
- Geopolitical events have heightened the attractiveness of alternatives due to energy security concerns
- China’s rapid adoption of electric vehicles. With the share of EVs in China passing 50% and rising rapidly. China could achieve 100% EV penetration by 2050, well below cost parity
- Demand reduction arising from a weak global macroeconomic backdrop in Meltdown and Boom and Bust scenarios

While the magnitude of the fall in oil demand is sensitive to these assumptions, significant declines are possible. We acknowledge that all modelling has limitations that can impact accuracy and reliability in forecasting climate-related economic impacts.

Figure 15: Global oil consumption



* No Time To Lose

10 The IEA’s **Stated Policies Scenario** refers to the current policies and measures that are officially in place and being implemented by governments.

11 The IEA’s **Net Zero Emissions by 2050 Scenario** outlines a pathway to achieve net zero emissions by 2050.

12 The IEA’s **Announced Pledges Scenario** include commitments and targets that countries have publicly declared, such as Nationally Determined Contributions and long-term net zero goals.

13 **M BOE per day** stands for **million barrels of oil equivalent per day**. This unit measures the daily production or consumption of energy resources, standardised to the energy content of crude oil.

Figures 16 and 17 show that under a scenario of market-driven progress towards the transition (Green Phoenix), significant progress towards more sustainable energy sources is possible both globally and in the UK with renewables gaining a substantially larger share by 2030. This growth under the Green Phoenix scenario is driven primarily by advancements in renewable technologies and the cost-effectiveness of new electricity generation options, particularly solar and wind rather than new supportive policies.

As of 2025, renewables¹⁴ in the power sector accounted for approximately 40% of global primary energy consumption. By 2030, in our Green Phoenix scenario, renewables are projected to account for nearly 49% of the global energy mix. In the most optimistic Roaring 20s scenario, the proportion would increase to 53%, while in the most pessimistic Meltdown scenario the proportion would remain close to current levels of 42%.

The UK’s renewable energy landscape differs from the global trend. Coal usage was phased out in 2024, leading to significant increases in wind energy in particular, and solar energy, which is expected to increase further. In 2025, renewables in the power sector accounted for 63% of the UK’s energy usage. By 2030, this is expected to rise to 74% in our Green Phoenix scenario. In the most optimistic Roaring 20s scenario, renewables could account for 83%, while in the most pessimistic Meltdown scenario, renewables might account for 67%.

14 Renewables are classified as nuclear, solar, wind and other (biomass, carbon capture and storage). We have included nuclear alongside renewable sources due to its status as a low-carbon energy source, consistent with the EU Taxonomy’s classification of nuclear as “transitional”.

Wind and Solar boom as fossil fuels fade

Figure 16: World: Green Phoenix, global power

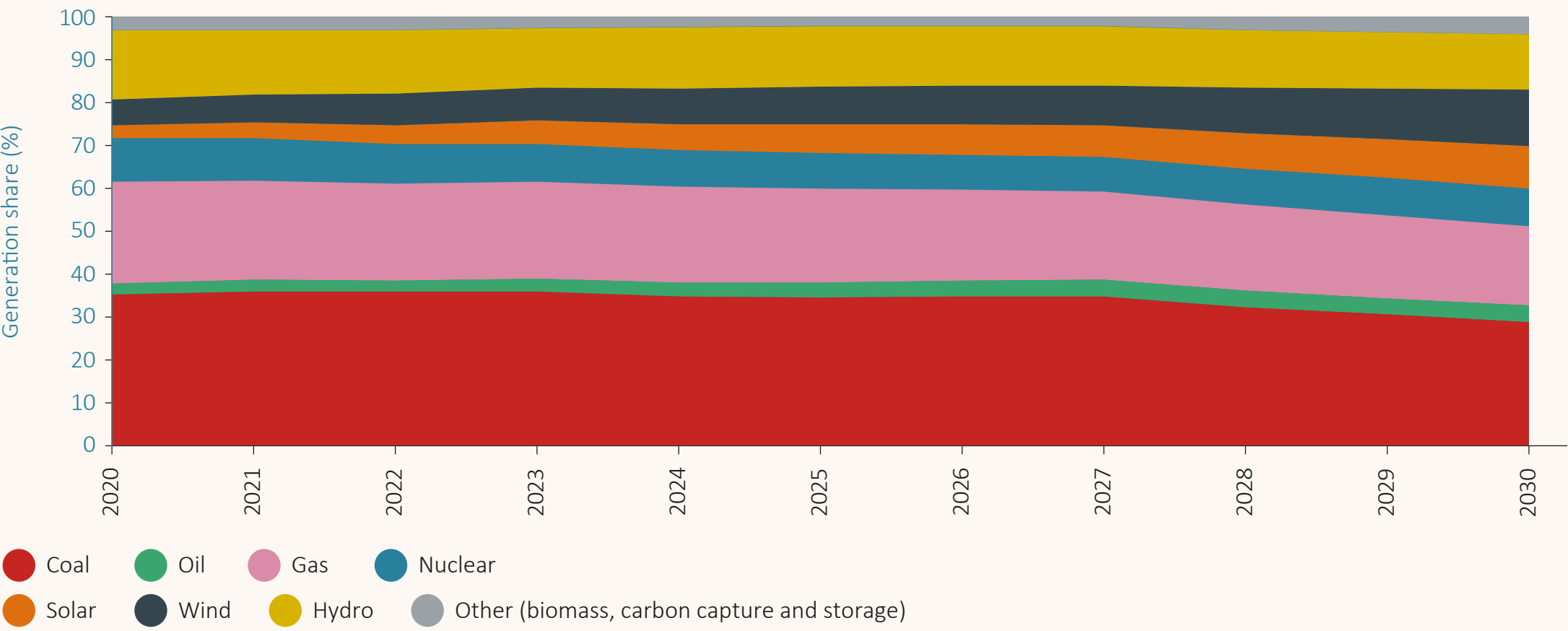
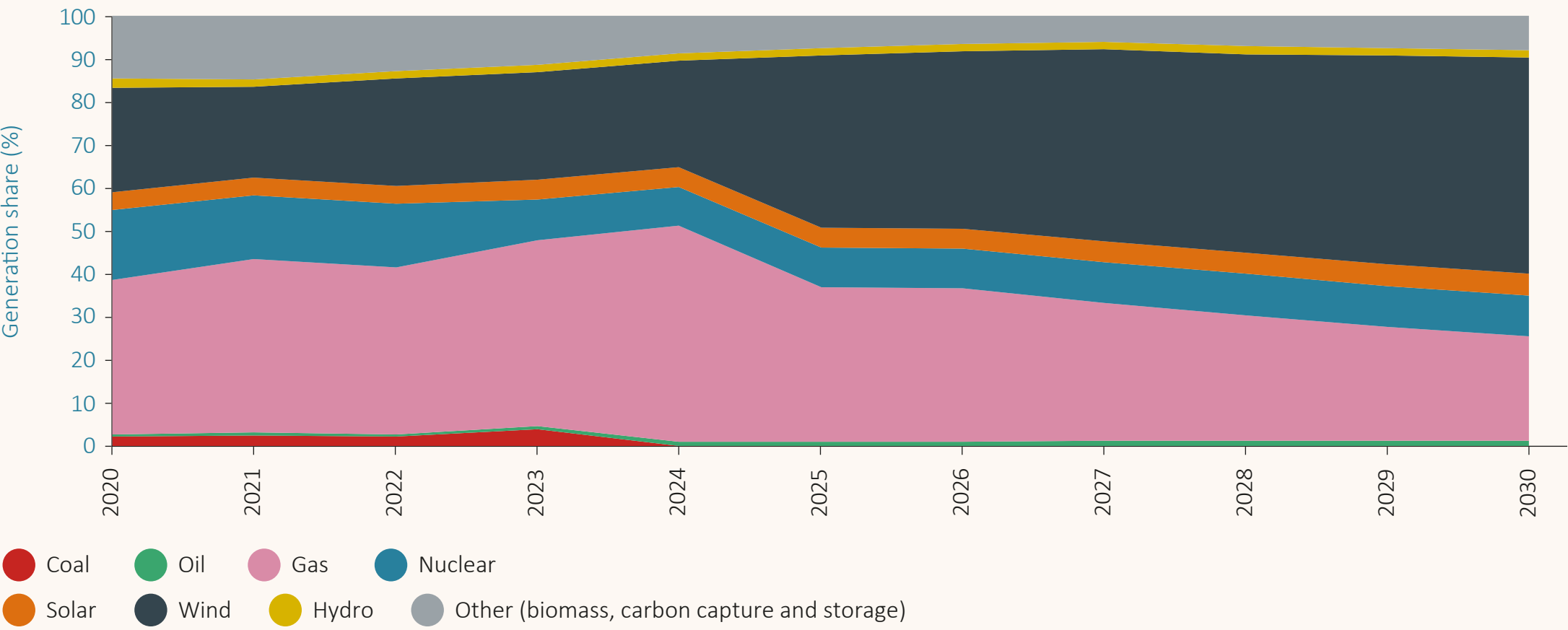


Figure 17: United Kingdom: Green Phoenix, global power



Wind energy accounts for about 10% of the world’s power supply. In contrast, the UK has a higher share of wind energy in its electricity mix, with wind meeting at least 30% of the country’s electricity demand. This difference is attributed to the UK’s favourable geographical conditions, strong governmental support and commitment to reducing GHG emissions.

The variation between scenarios lies in the pace and scale of renewable energy adoption, influenced by factors such as policy effectiveness, technological advancements and economic incentives.

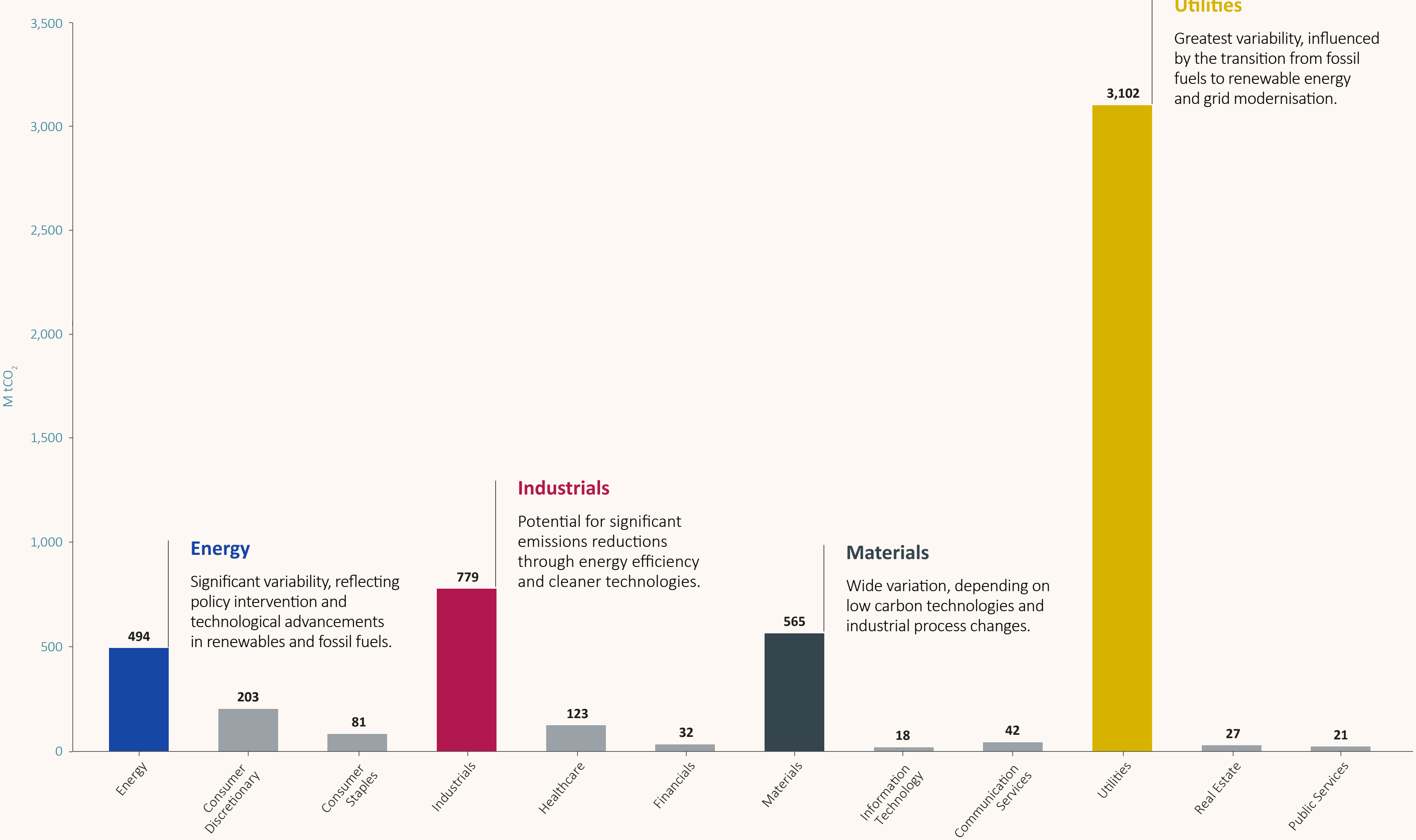
Global CO₂ emissions across scenarios by sector
Figure 18 illustrates the potential fluctuations in CO₂ emissions across various sectors.

The graph highlights that the Utilities sector shows the highest variability. The year-on-year variability of assumed emissions across scenarios could be as high as 3,000 MtCO₂. This variability is influenced by the transition from fossil fuels to renewable energy and grid modernisation.

Other sectors, such as Industrials and Materials, also show significant potential for emissions reductions through energy efficiency, cleaner technologies and low-carbon industrial processes.

Overall, the graph underscores the diverse impact of different sectors on CO₂ emissions and the importance of targeted strategies to achieve emissions reductions by 2030.

Figure 18: Annual variability of CO₂ emissions across scenarios to 2030



Physical risk

Methodology overview

Our physical risk modelling uses spatially explicit GDP data, overlaid with the projected simulations of hazard occurrence then aggregated to quantify the potential country-level GDP impact of physical risk. We split the planet into grid cells, each with a resolution of 1km x 1km. We have limited the hazard scope to cover five acute hazards (river floods, wildfires, heatwaves, tropical cyclones, drought) and one chronic hazard (the impact of heat stress on labour productivity).

Since the analysis is based on a shorter-time horizon to 2030, the approach is considered largely scenario agnostic and it relies on Representative Concentration Pathway (RCP) 2.6¹⁵ for simplicity.

Indicative modelling results

Figure 19 shows the estimated physical risk exposure associated with an illustrative selection of countries that are meaningfully represented within our investment portfolio. The colour coding represents the country-level hazard occurrence probabilities whereby red indicates high probability and green low probability.

Since our modelling results do not explicitly account for adaptive capacity, these hazard probabilities are also overlaid with ND-GAIN¹⁶ readiness scores, offering a holistic view of each country’s vulnerability and capacity to adapt.

Note that the colour scheme in Figure 19 is designed to provide a relative view of physical risk across the countries shown. By way of example, dark green RAG (Red, Amber, Green) status for heatwaves in the UK should not be interpreted as a 0% probability for the occurrence of heatwaves but implies that it is the least probable when viewed alongside other hazards facing the UK as well as the heatwave occurrence probabilities for other countries.

Commentary on the results

- The climate risk profile for the UK shows flooding as the dominant threat to investments by 2030, with potential GDP impact concentrated in major urban centres and infrastructure corridors. This flooding exposure aligns with findings from the UK’s Third Climate Change Risk Assessment, particularly highlighting vulnerabilities in developed areas along major rivers and in urban centres.
- The US has significant exposure to various physical risks due to its large share size and diverse geographical landscape. As a result, different regions within the US face distinct hazards.
- The high tropical cyclone probability for Japan aligns with documented trends, with research showing increasing tropical cyclone intensity in the Western Pacific (Yamaguchi et al., 2020).
- River flooding and drought represent major risks for China with the former concentrated in major river basins and urban centres and the latter reflecting growing water stress challenges.
- The physical risk exposure for emerging markets is significantly higher, with heatwaves posing a major threat to India and wildfires to Brazil.

Figure 19: GDP-weighted exposure probabilities associated with each hazard

Country	Flood	Wildfire	Heatwave	Tropical cyclone	Drought	Loss in labour productivity due to heat stress	ND-GAIN readiness score	ND-GAIN readiness score (with GDP adjustment) ¹⁷
United Kingdom								
United States of America								
Japan								
India								
China								
Brazil								

Physical risk considerations in asset allocation

USS has an internal Country Risk Scorecard which evaluates the risks associated with all the MSCI ACWI constituent countries against a range of metrics. The scorecard has been updated to capture physical risk as a metric to ensure that it is captured as a distinct risk in asset allocation-related considerations.

15 **RCP 2.6** represents a pathway where GHG emissions are significantly reduced, resulting in a best estimate global average rise of 1.6°C by 2100 compared to pre-industrial levels.

16 **ND-GAIN** is an index that measures a country’s vulnerability to climate change and its readiness to improve resilience.

17 There is a correlation between ND-GAIN scores and GDP per capita. To account for this, a ‘GDP adjusted ND-GAIN score’ is introduced. This score is defined as the distance of a country’s measured ND-GAIN score and its expected value based on the regression of ND-GAIN and GDP. Positive values reflect better resilience than expected, given a certain level of GDP per capita.

Scenario analysis conclusion

We believe our enhanced climate scenario analysis more accurately reflects real-world risks and opportunities, strengthening our ability to navigate a wide range of potential futures in an increasingly volatile and uncertain world.

Our goal is not to predict the future with precision, but rather to challenge assumptions and prompt critical discussions that leads to meaningful dialogue.

We made significant progress across both transition and physical risk workstreams during the year, establishing a solid foundation for more detailed analysis. However, there is still considerable work ahead – particularly in ensuring that insights from both bottom-up and top-down assessments at the company and asset levels are effectively communicated to, and utilised by, our investment teams.

These ongoing efforts support our broader objective of integrating scenario-based insights into the investment decision-making process.



For members, for the future.

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