Task Force on Climate-related Financial Disclosures

Climate Report 2022

ROYAL LONDON
ASSET MANAGEMENT

Contents

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Compliance Statement:

The disclosures from Royal London Asset Management, including third party or group disclosures cross-referenced, complies with the requirements under the FCA's Policy Statement PS21/24.

Piers Hillier
Chief Investment Officer

Foreword from CEO

Hans Georgeson
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Climate change is one of the biggest risks facing our society today. The effects of climate change and the actions taken to mitigate it will have a major impact on our society – socially, politically, and economically. Finding information on which companies are most at risk from climate change and which are making changes in how they behave is not easy.

The Task Force on Climate-related Financial Disclosures (TCFD) recommendations are designed to help the investment community build a more in-depth and consistent picture of the impact of climate change.

This is our third TCFD annual report, but our activity in this area is just one part of our track record in Responsible Investment, going back to the establishment of our current team in 2013. Over time the way that we engage and look at climate change and other factors has changed, but we have always been active owners – trying to help drive change in our underlying investments to build better outcomes for our clients and wider society.

We can't do it alone. We work with our clients, our peers and our parent company Royal London. Collaboration is a core value at our company and when it comes to climate change, there has rarely been a better example of where collaboration is vital to achieving the best outcomes for all.

In 2022, we made progress on a number of fronts. Our highlights section covers the key ones, but I would like to draw attention to two that I think demonstrate how we look at climate.

The first is our Net Zero Stewardship Programme, as this gives clear and transparent information on how we interact with our investee companies. The second is the work done on data and metrics, because while it is easy to point at a number and say it is good or bad, we believe that this is an area our whole industry needs to work together on to gain better-quality insights.

We recognise there is more to be done. Our key objectives for 2023 and beyond focus on continuing work on developing our climate transition plan, enhancing the knowledge of our colleagues through our Environmental, Social and Governance (ESG) and climate change training programme and their access to good quality climate information, and scaling up our engagement activities to influence real-world decarbonisation.

Transitioning to a low-carbon economy is a decades-long process that needs to be accelerated. Our long-term approach towards engaging with companies often requires patience – some of our engagements continue for years. We are committed to playing our part in moving fairly to a sustainable world and helping our clients on their own journey towards meeting their climate ambitions.

Executive Summary

We are pleased to present our 2022 Royal London Asset Management Climate Report, which has been prepared in accordance with the recommendations of the TCFD. Royal London Asset Management has been an official supporter of the Financial Stability Board's (FSB) TCFD since June 2020, aiming to increase and improve our own disclosure and that of the companies we invest in. This is our third Climate Report.

Reflecting on current climate action in the asset management sector, we see that the focus is primarily on emissions measurement and scenario analysis. While we agree that these are useful climate risk management considerations, we believe that the actions taken by investors and companies are at least as important to reach net zero and to effectively manage climate risk. Carbon-related metrics and climate modelling will continue to evolve and improve through bold leadership. This is central to our strategy, as highlighted in this report, and is discussed in further detail in our Net Zero Stewardship Report.

Royal London Asset Management is a fully owned subsidiary of the Royal London Mutual Insurance Society (RLMIS) and a part of the Royal London Group. Although RLMIS and Royal London Asset Management are part of Royal London Group, Royal London Asset Management is managed separately and is overseen by its own Board. RLMIS also publishes its own TCFD report.

In this report we aim to:

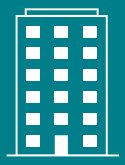
- provide an update on the development of our climate transition plan and integration of climate into our wider strategy;
- disclose the governance structure we have in place to manage climate-related matters;
- detail how we identify, assess and manage climate-related risks and opportunities;
- share an overview of the progress we have made towards implementing our climate strategy to deliver on our climate commitments; and
- set out the areas where we will focus our efforts over 2023 and the following years.

We have also produced TCFD reports for each of our products.[ii] Non-property funds are available on our Fund Centre website. For institutional investors, our property funds are available on our Capabilities website.

Due to the emerging nature of climate data applications and methodologies, we recognise that climate disclosures are subject to some significant limitations and therefore analysing emissions attributions in our portfolios is challenging. This includes carbon emissions data being incomplete or inconsistent across different asset classes, sectors and regions. In this report, to enhance the consistency of our disclosures, we have updated our data preparation approach which has led to the restatement of some of our metrics from previous years. In addition, the methodologies being used to calculate the forward-looking metrics, including Science-Based Target initiative (SBTi) alignment, the implied-temperature response of issuers' emissions trajectories, or stress-testing the value of our assets under different climate-change scenarios, are still evolving. We discuss these limitations at length in Appendix II. We expect the quality of climate data to improve over time, and will focus on using the most appropriate methodologies available in line with industry recommendations. This is the entity-level TCFD report for Royal London Asset Management.

Our financed emissions fell by 16% from 2020 to 2022.[i]

Our WACI fell by 28% relative to our 2020 baseline.[i]



We assessed 80 companies representing 52% of our financed emissions.[i]

i Within our Listed Equity and Corporate Fixed Income portfolios.

ii This entity-level TCFD report is a standalone report and metrics stated here are not an aggregation of those in the fund-level reports.

2022 activity highlights

Published our climate targets as part of our support of the Net Zero Asset Managers (NZAM) initiative.

Engaged with 52% of our financed emissions across our corporate fixed income and equity holdings.

Made progress towards developing a comprehensive climate transition plan that details the activities needed to both support our clients and deliver on our climate ambitions.

Launched our Global Equity Transitions fund, providing investors with exposure to companies that can make a real contribution to the transition to a more sustainable world.

Developed our Net Zero Stewardship Programme, which implements a framework to research our investee companies' climate transition plans and engage with them accordingly.

Undertook eight Net Zero Carbon audits across our multi let directly managed property assets. These audits analyse building performance in comparison to the 1.5C pathway set out by the Carbon Risk Real Estate Monitor (CRREM) and identified interventions required to meet likely decarbonisation and energy reduction targets.

Actively involved in initiatives to help drive change, such as the Climate Financial Risk Forum (CFRF).

Key areas of focus for 2023 and beyond

Develop our climate transition plan by undertaking fund specific climate analysis and scenario modelling and holding in-depth discussions with our investment teams.

Focus on scaling our engagements up to 70% of our financed emissions by 2030, aiming to ultimately engage with 90% of our financed emissions.

Evaluate more forward looking and net zero alignment metrics and integrate them further into our investment research to support portfolio decarbonisation in line with client expectations.

Expand our government and policymaker engagement strategy with Royal London Group to ensure, through industry bodies and directly, that we carry out targeted engagement to influence policy frameworks and support the transition to net zero across the real economy.

Embed climate resilience across the property portfolio by aiming to undertake climate related risk assessments across our property assets under climate change scenarios to ensure that our buildings are future proof and resilient.

Invest in our ESG and climate change training programmes, including net zero training for client facing colleagues, investment professionals, Board and Executive Committee members.

Develop new products and funds to help our clients invest in assets and funds that help support the transition to a lower carbon economy.

Strategy

In this section we will provide:

- a progress update on the development of our **climate transition plan**;
- an overview of how our **Net Zero Stewardship Programme** is central to our climate strategy; and
- details of the **climate solutions** we are offering to clients and our plans to expand on these in 2023.

The essence of our climate change strategy is rooted in our deep commitment to stewardship and responsible investment. However, climate science tells us that companies and governments are responding too slowly to the perils of climate change. The speed of response has been accelerating since the Paris Agreement, but the limited outcomes of the 2022 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC (COP27)[iii] climate summit in Egypt illustrate how countries are still not progressing fast enough to avert the worst impacts of climate change.

We believe encouraging companies to act for long-term societal benefit is good for both society and investors. This is why stewardship and advocacy are embedded in our strategy towards managing the risks and opportunities associated with climate change.

We also recognise the contribution of our own operations and value chain to climate change. Our strategy towards reducing our operational emissions is implemented by Royal London Group and is provided in detail in its TCFD report.

Progress in developing our climate transition plan

As we disclosed in our last climate report, we are working towards developing a climate transition plan. During 2022, we took the first steps in doing so, working with internal and external experts to evaluate where we are in our climate journey. Over a 20-week period, we conducted an in-depth gap analysis of our commercial proposition and investment impacts and opportunities to help us develop our climate transition plan. We noted three key areas of focus:

1. Deepen and further embed climate analysis into our investment decision-making
2. Focus on driving net zero alignment through engagement with investee companies
3. Create new products that support climate solutions

Our strategy is still evolving as we work towards producing a climate transition plan in line with government guidance. Our aim is to take the following steps to develop this:

1. **Better understand our clients' needs** – Our clients are an essential part of our pathway to net zero and through continued dialogue with them, we aim to understand how we need to develop our products to meet future demand.
2. **Improve proprietary tools, data and systems** – We will continue enhancing the quality of our proprietary ESG and climate data and analytics tools. This includes focusing on our understanding and use of forward-looking metrics, recognising that this is an evolving field and that data and knowledge is changing rapidly. We will also look to enhance our ability to do stress testing under different temperature scenarios, including a 1.5°C scenario, 2°C scenarios and a 'hot house' 3°C scenario.
3. **Embed climate analysis into investment decisions** – Using the lessons learnt from a preliminary deep-dive analysis, we intend to carry out deeper and higher-quality assessments of the financial impact of climate change on the entities in which we invest and how that affects the overall risk and performance of our funds. We expect this analysis to evolve over time and vary across asset class, with some classes posing more challenges than others.
4. **Focus on net zero engagement** – We believe that one of the strongest aspects of our plan to date is our stewardship programme, which lies at the heart of our net zero strategy and is described in detail on page 9 of this report.
5. **Innovate and evolve our product range** – We will continue to look for opportunities to innovate further through collaboration with clients, academic partners and other stakeholders and to create more products that support our clients as they move towards net zero.

We are carefully monitoring emerging best practice standards and regulatory requirements and we plan to publish a formal climate transition plan in line with the recommendations of the Transition Plan Taskforce (TPT).[iv]

iii COP27 refers to the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change.

iv The Transition Plan Taskforce (TPT), launched in April 2022, was developed in order to provide guidance to the private sector when developing its climate transition plans. TPT is informed by and builds upon international disclosure standards.

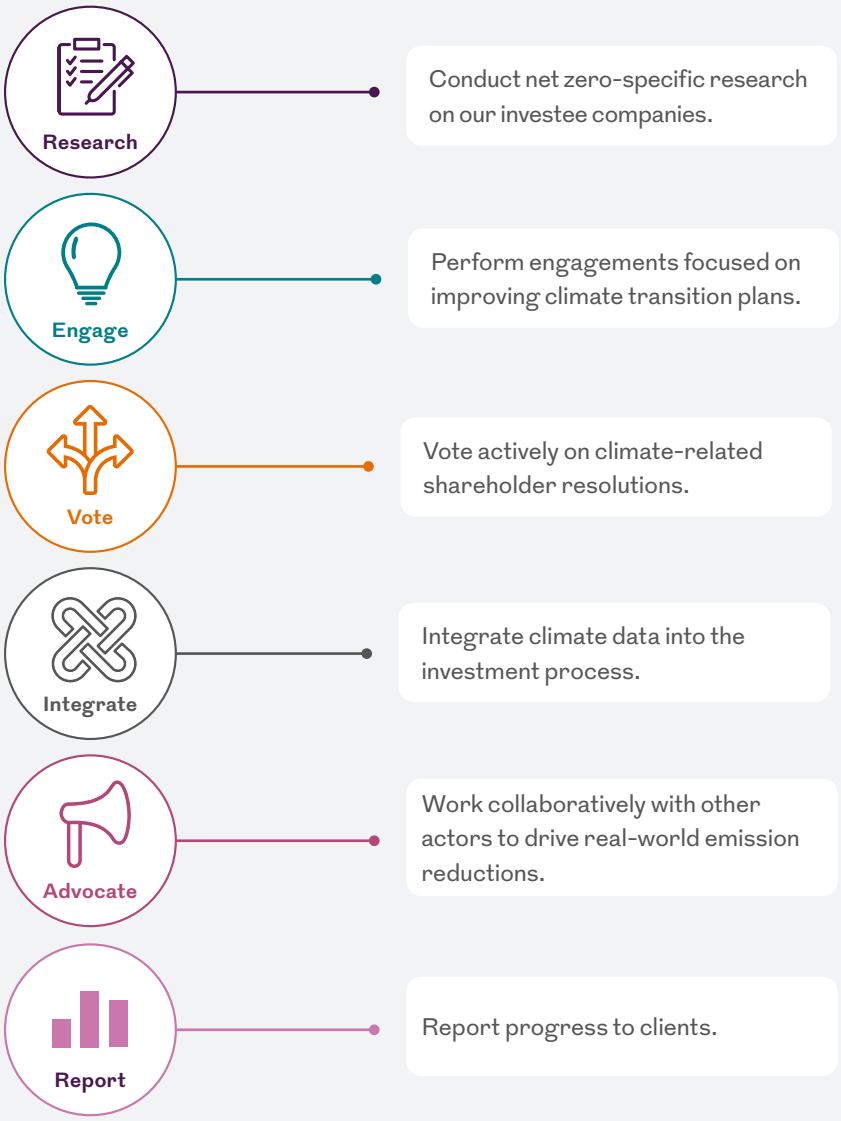
Spotlight: challenges across asset classes

We manage products that span multiple asset classes, including equities, corporate credit, sovereign and private debt, property and commodities, with some exposure accessed via derivatives. This creates challenges and complexities for us when developing an overall climate transition plan for our whole business. Each asset class will have a different transition pathway as the financial objectives, risk profiles and time horizons will differ. In some funds, we can significantly reduce climate risk by selling some assets or swapping them for companies with stronger climate governance. In others, we know that our best route for change is through engagement with underlying issuers or by investing in assets involved in the transition to net zero. Our means of influencing climate outcomes also vary depending on the type of asset. For example, in equities we may need to focus on engagement and voting, in credit we may want to look at debt structure and covenants and in property we need to focus on future proofing the value of our buildings under various climate scenarios. We don't believe in a one-size-fits-all approach. We also know that for some investments like commodities and derivatives, where we have some material exposures, there is not yet an agreed methodology for calculating and reporting our carbon emissions and therefore they are not covered in our report this year. We are working with data providers, partners and regulators to address this challenge.

Net Zero Stewardship Programme

Engaging on climate is one of the most important elements of our strategy towards meeting our climate commitments and managing climate-related risks and opportunities. Following our net zero commitment in 2021 (the details of which can be found in our Metrics & Targets section on page 28), we enhanced our engagement approach and investment analysis by integrating climate datasets within our processes to help achieve our climate goals. The roll-out of our Net Zero Stewardship Programme in 2022 is a prime example of this. The programme sets out our framework to evaluate the progress of companies in our portfolio and the delivery of decarbonisation plans each year until 2030. This framework is based on six pillars:

Figure 1: Six Pillars of our Net Zero Stewardship Programme



This analysis is conducted by our responsible investment team and the output is considered by investment teams across different asset classes when they are making investment decisions. In this report we provide an overview of how these pillars are used within our strategy to manage climate-related risks and opportunities and to reach our net zero commitments. More details on each of these, including an update on the activities undertaken in 2022, can be found in our Net Zero Stewardship Report.

Research

In this pillar of our framework, we first assess our investee companies' plans against 12 specific indicators (see figure 2) that assess a company's willingness and ability to transition to net zero. These indicators are aligned with the Climate Action 100+ (CA100+) Net Zero Company Benchmark.[v]

Figure 2: Royal London Asset Management 12 net zero indicators used for research, engagement and voting.

Set emissions reductions targets aligned with the Paris Agreement

1. **Net zero -** Reach net zero emissions in a timeframe aligned with the Paris Agreement.
2. **Targets -** Include emissions from Scope 1, 2 and material Scope 3 activities in targets.
3. **Offsets -** Only offset residual emissions following net zero-aligned offsetting principles.

Bring others to net zero

4. **Solutions -** Commit to scaling-up technology and solutions required to achieve net zero.
5. **Lobbying -** Lobby for policies that accelerate the transition.
6. **Just transition -** Engage with the business value-chain and communities to ensure a just transition and avoid negative impacts on nature.
7. **Adaptation -** Invest in adaptation measures to ensure resilience against climate impacts.

Demonstrate action now

8. **Short-term delivery -** Set and deliver short-term targets, that drive action during this decade.
9. **Governance -** Align the board, management, and employees' incentives to achieving net zero targets.
10. **Action plan -** Develop an action plan with specific operational implications and business model transformation to deliver net zero.
11. **Capex plan -** Align capital expenditures and accounting practices to the delivery of net zero.
12. **Transparency -** Disclose transparently and consult climate transition plans with stakeholders.

v Climate Action 100+ is an investor-led initiative which aims to ensure necessary action on climate change is taken by the world's largest corporate greenhouse gas emitters.

Each of the 12 net zero indicators is assessed using a 'red / amber / green' rating (denoting does not meet minimum standards / on track / meets highest standards respectively) based on proprietary criteria factoring in sector-specific considerations. We use various sources of information to analyse investee companies' climate transition plans, including company disclosures, data providers' input and academic research and provide a qualitative analysis for each of our ratings which is available for investment teams. This assessment is shown in figure 2.

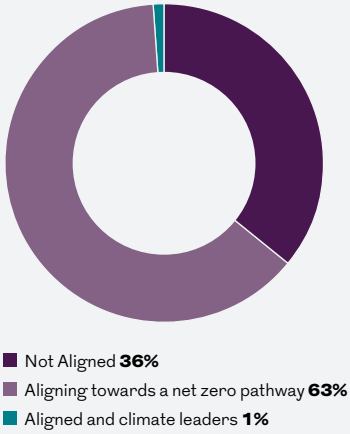
We then use these indicators to separate investee companies into three Net Zero Investment Framework (NZIF)[vi] alignment categories:

- aligned to a net zero pathway;
- aligning towards a net zero pathway; and
- not aligned.

In 2022, we assessed 80 companies' transition plans, representing approximately 52% of our financed emissions. Figure 3 shows that the majority of these companies are in the process of aligning to a net zero pathway, with just one company currently aligned.[vii] Just under 40% are still not aligned, indicating that there is still significant progress to be made across many of our investments. We observed that there are more companies not meeting our minimum standards across the 12 net zero indicators than exceeding our expectations, as shown in figure 4. The worst performing sector across these indicators was the energy sector.

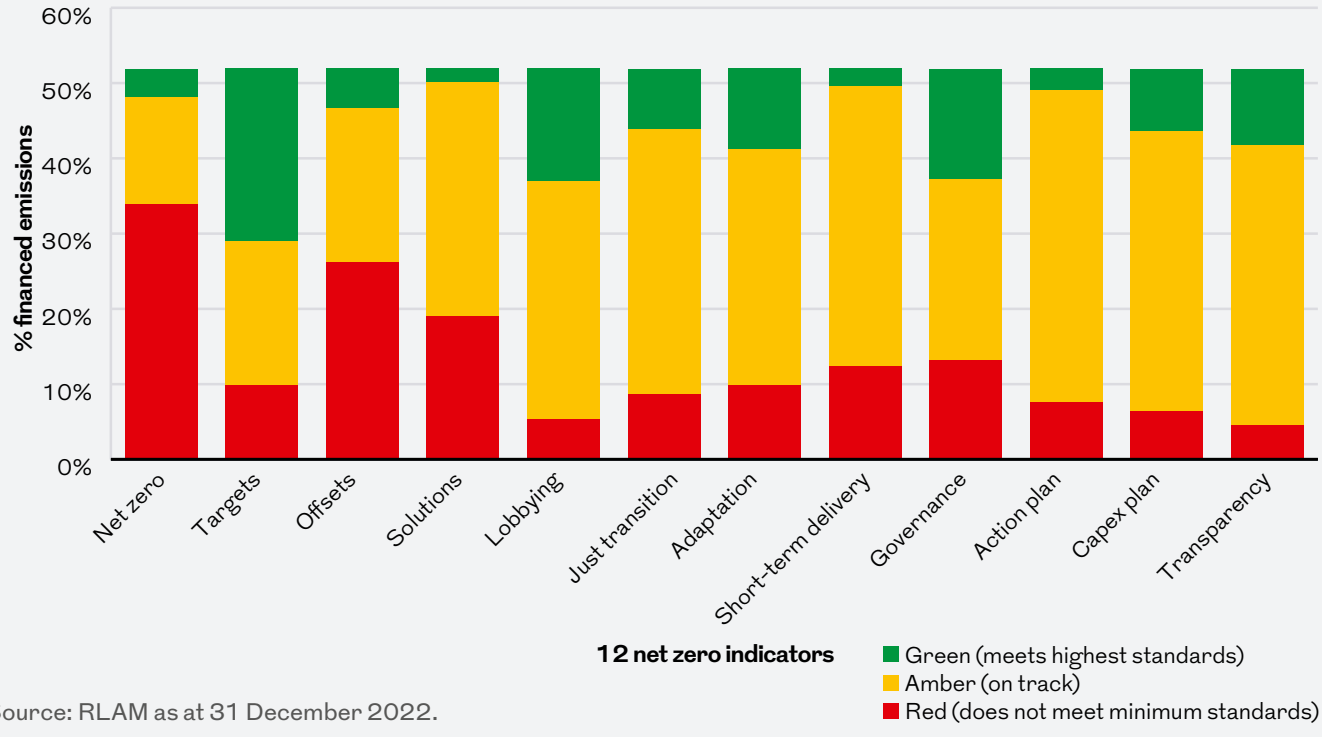
We were pleased to see a large number of companies setting emission reduction targets, particularly larger and higher emitting companies. However, our indicators show that those targets are typically not very ambitious and companies are often not producing sufficiently detailed action plans or delivering on their interim short-term targets. There was also significant room for improvement on scaling up technologies and solutions required to achieve net zero, with most companies showing a lack of evidence that their products and services provide genuine climate solutions.

Figure 3: Assessment of NZIF alignment



Source: RLAM as at 31 December 2022 (for rated instruments).

Figure 4: Assessment of financed emissions and ratings per indicator



Source: RLAM as at 31 December 2022.

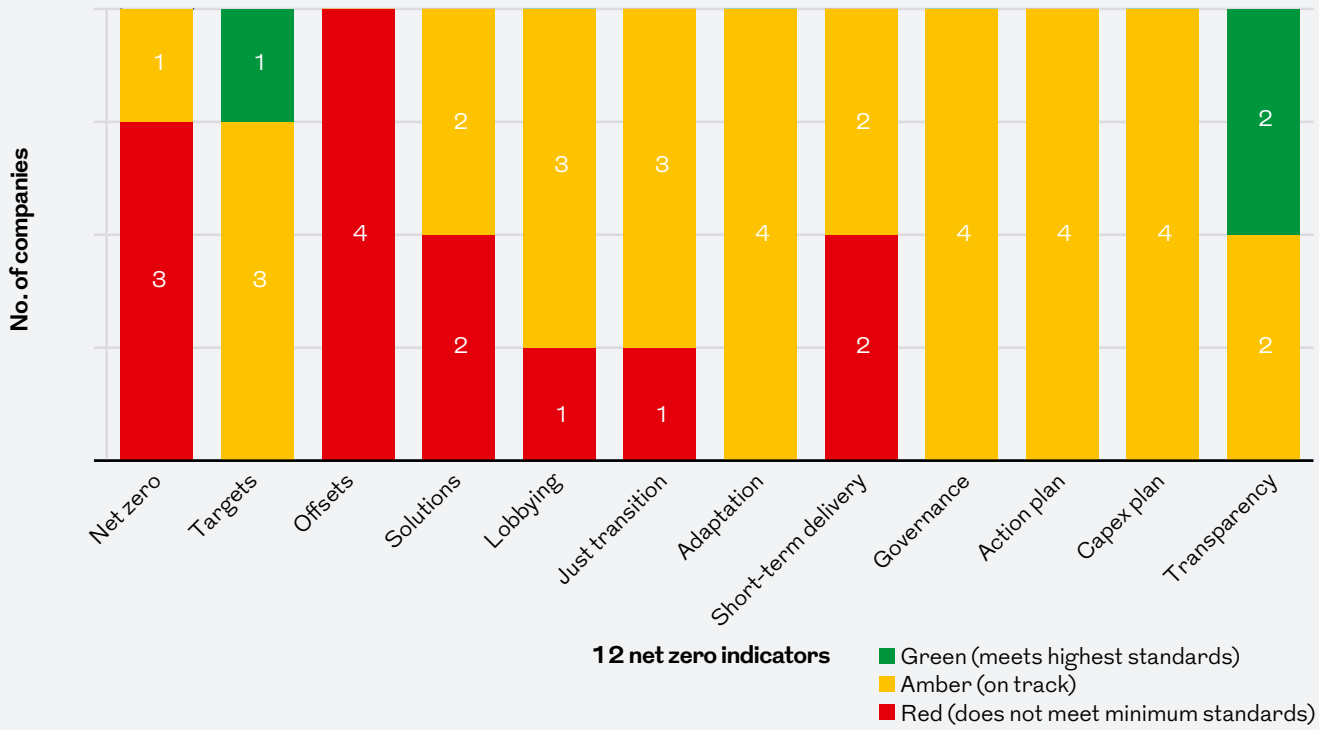
vi Royal London Asset Management uses a proprietary aggregation method to align with the Net Zero Investment Framework. Details of this can be found in the Appendix I.

vii Two of the instruments that we assessed were not rated as there were special purpose vehicles for which the methodology was not applicable. They do not appear in figure 3.

Case studies: applying our 12 net zero indicators to high-emitting sectors

Diversified miners

Figure 5: Diversified metals and mining - rating per indicator



Source: RLAM as at 31 December 2022.

In figure 5 we show our assessment of the four companies in the mining industry to which we have the largest exposure across our 12 net zero indicators. The assessment shows that three of the four companies do not meet our minimum standards with regards to their net zero targets as defined in figure 2.

One company, Glencore, presented differences in its strategy relative to other large, diversified miners. This is mainly due to its continued exposure to thermal coal, resulting in it having higher Scope 3 emissions than some of its peers. Our net zero engagement strategy calls for companies to reduce their Scope 1, 2 and 3 emissions. For diversified miners this is easier to achieve through a portfolio of minerals and metals than coal, which has much higher Scope 3 emissions.

Even so, Glencore's targets are more comprehensive than some of its peers, as they do include Scope 1, 2 and 3 emissions. It has also committed to close its coal mines rather than selling them on, which could result in better real-world carbon reductions, although the pace these mines are closing at is slow.

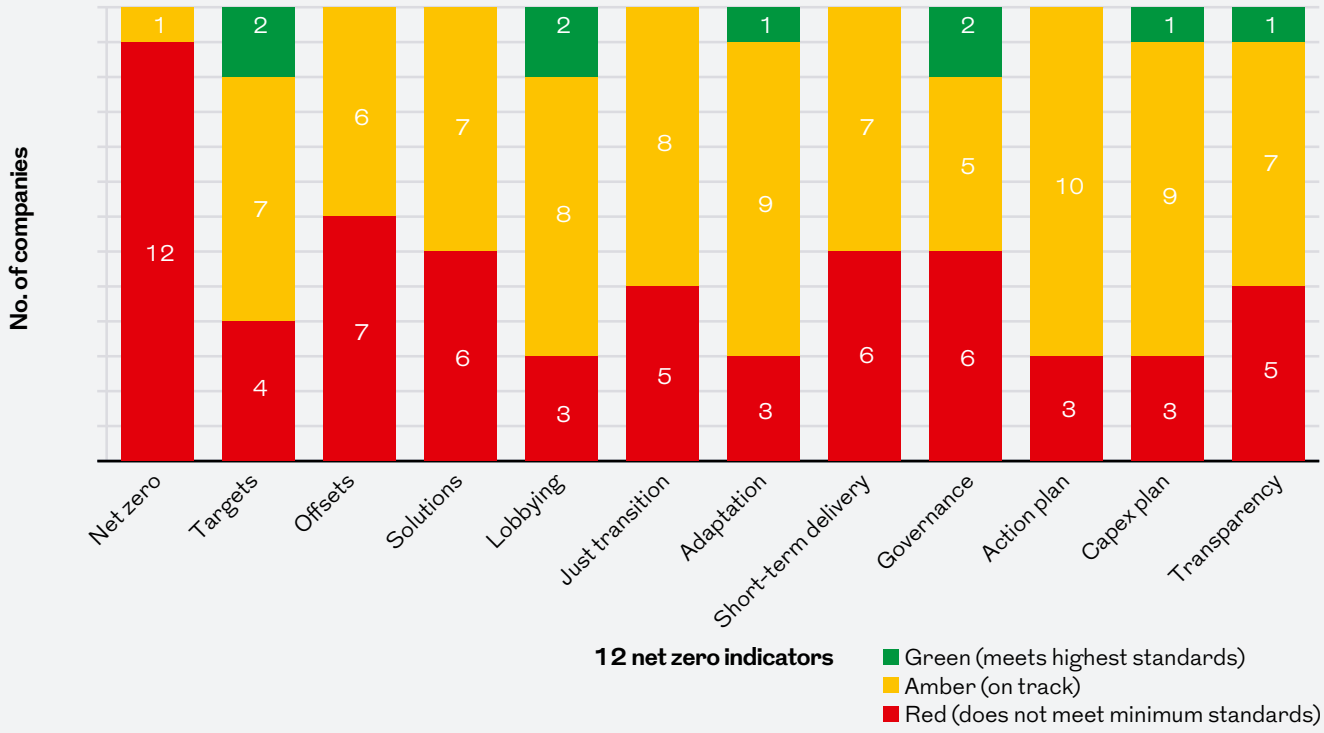
Transition minerals (e.g., iron ore, copper, nickel and zinc) are vital in enabling the climate transition, as they are used in the production of electric vehicle batteries, wind turbines and electricity networks. In other mining companies, such as BHP and Rio Tinto, transition materials account for over 50% of revenues.

To help ensure a just transition, mining companies must take into consideration the wider communities and workers. To support this transition within the industry, our Head of Responsible Investment currently sits on the Board of the Initiative for Responsible Mining Assurance (IRMA). This organisation seeks to set a standard verification process at mine sites that encompasses communities and workers.[viii]

viii Standard - IRMA - The Initiative for Responsible Mining Assurance

Oil and gas

Figure 6: Oil and gas - rating per indicator

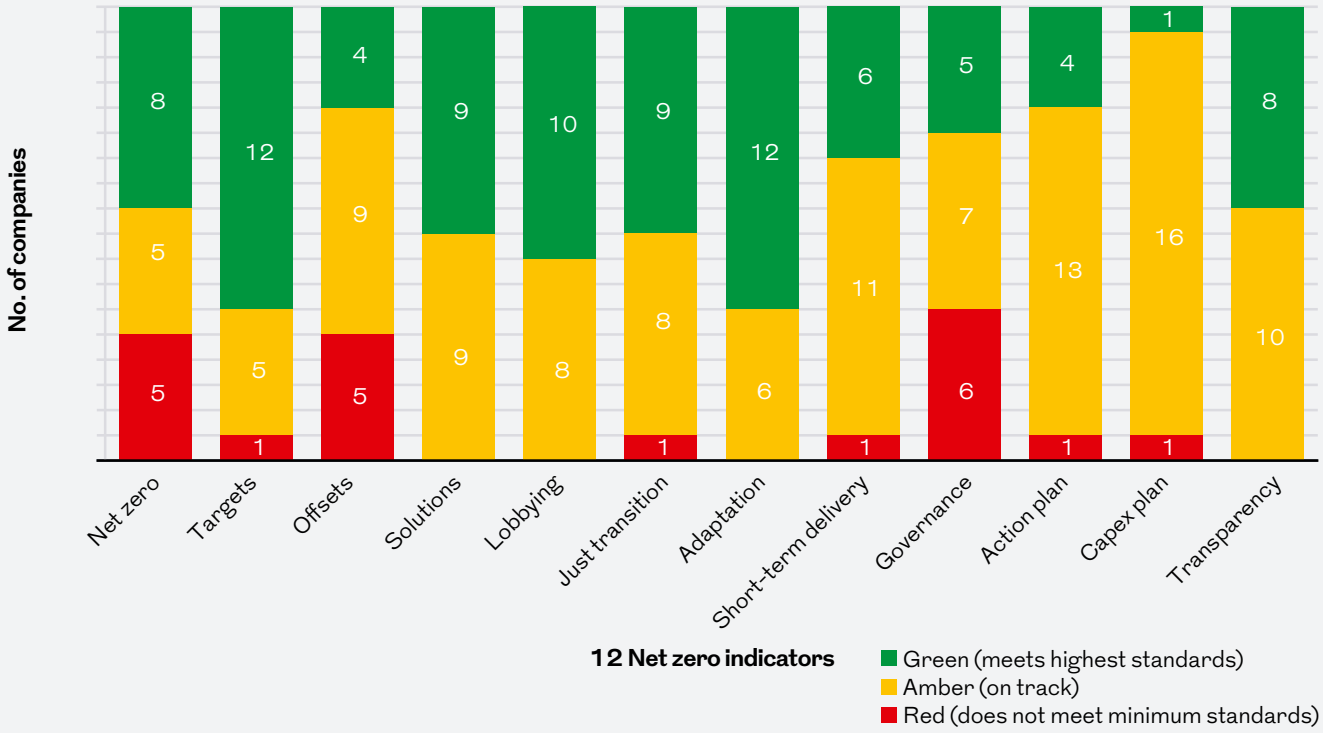


Source: RLAM as at 31 December 2022.

Oil and gas companies have one of the most difficult transition pathways, with current business models that still depend on the increasing production of fossil fuels. Our analysis showed that 12 companies did not meet our minimum standards with regards to net zero (reaching net zero emissions in a time frame aligned with the Paris Agreement). Some of these companies, mainly those who only operate as small exploration or production players, are showing very little progress, as shown by the large number of red indicators in figure 6. Whereas most companies are targeting only marginal improvements, a few large European oil and gas groups are providing detailed and well thought through climate plans. However, the credibility of those plans vary due to, for example, an excessive dependence on nature-based carbon offsets. Others are continuing to invest in new frontier exploration or lack transparency in the disclosure of their baseline methodology for targets.

Utilities

Figure 7: Utilities - rating per indicator



Source: RLAM as at 31 December 2022.

Our assessment in figure 7 shows that our utilities holdings are better positioned in the transition to a low carbon economy than other high-emitting sectors. Just five utilities companies did not meet our minimum standards when setting their net zero targets, while five were on track and eight met our highest standards. This is mainly because this sector has a clearly defined transition pathway through the widespread availability and increase in cost competitiveness of renewables. Furthermore, a majority of utility companies in our portfolio are European and therefore subject to a more mature and stringent regulatory environment than other markets around the world, where decarbonisation has been to date less of a priority. For example, the only issuer classified as 'not aligned' is based in the United States, where ESG has been in the past prioritised to varying levels on a state-by-state basis. This result highlights the importance of government regulations incentivising firms to set credible transition plans. The strongest performing indicators within the sector were investment in adaptation and target-setting encompassing all scopes of emissions. This is in contrast with the oil and gas companies we assessed, where this is a relatively weak indicator with only one company (Equinor) having robust adaptation actions.

Engagement

We believe that engagement with investee companies on climate issues will deliver greater real-world impact than divestment, as once divested, it is much harder to influence change. We use engagement as a lever to accelerate climate action across both equity and fixed income portfolios, in addition to using our votes to target equity holdings.

Nearly half of our engagements with companies in 2022 were climate related. Our net zero engagements focus on the largest emitters in our portfolio across Scope 1, 2 and 3 emissions. This included those in the utilities, banking and energy sectors, including oil and gas and diversified mining companies.

Climate engagement under our Net Zero Stewardship Programme aims to encourage and improve companies' climate transition plans. We do this by partnering with investor networks such as CA100+ or engaging on a one-to-one basis with the companies in our funds.

During 2022, we sent 32 letters to companies stating our expectations of credible climate transition plans and held meetings with sustainability experts, Chairs, CEOs and board members. We followed up with several companies signalling where we expected improvements within our 12 indicators. Last year, our activity was predominantly among companies we hold across both our equity and fixed income portfolios. This enabled us to use a variety of tools for escalation, including exercising of voting rights when we are exclusively shareholders or holders of both equity and debt.

Some companies do not respond to our requests for engagement, despite having what we consider to be significant, persistent or intractable ESG issues that pose a significant risk to our clients' assets. In such circumstances, we will escalate to the relevant Head of Desk, our Chief Investment Officer and our Head of Responsible Investment to discuss the most appropriate action to take. Decisions, which may include divestment if such issues were not to be addressed, and actions agreed will be reported to the Investment Committee.

In our work on climate, we also look also at how climate affects other areas that matter to us as responsible investors, including nature, human health and economic inequality. As signatories to the Statement of Investor Commitment to Support a Just Transition on Climate Change, we seek improvements in companies' social impact as well as their environmental impact.

For more details and examples of our engagement work during 2022, please see our annual Net Zero Stewardship Report.

Engagement example: banks – follow the money

Barclays, HSBC, Lloyds Banking Group, NatWest

Provision of capital plays an essential role in enabling customers to transition to sustainable low-carbon economies. By incorporating just transition into their climate transition plans, banks can assist the wide range of sectors, regions and communities they finance.

At the AGMs of Barclays, Lloyds Banking Group, NatWest and HSBC, Royal London Asset Management and the Friends Provident Foundation (FPF) asked the banks to consider integrating just transition throughout their climate transition plans. We met all four banks in Q3, rearticulating the business case and providing suggestions on how integrating just transition into their plans would look. There was a positive reaction with all four banks appearing enthusiastic to integrate just transition into their operations and reporting, yet they remain uncertain on how this will be implemented in practice. NatWest considered its purpose to be closely aligned with social impact and this guided how they implemented climate commitments. Barclays focused on its role in community investments and how this could be linked to urban regeneration. Lloyds Banking Group had examples of supporting SME finance for climate solutions. Around COP27, HSBC announced its support of the Just Transition Energy Partnership for Indonesia and Vietnam, and shortly after, they included just transition as an objective of their energy policy, being the first bank to do so.

Voting

Voting is integral to Royal London Asset Management's stewardship strategy and is used to reinforce our key engagement messages to investee companies. We publish our voting policies and disclose the rationale behind each vote on our website. Proxy voting can serve as an escalation technique in our stewardship programme, or as a trigger for specific action on companies' climate plans.

For each climate resolution where we are eligible to vote, we aim to apply a 'decision tree' using our 12 net zero indicators detailed on page 10 of this report. This helps us to identify gaps or issues and to cast our votes fairly and consistently.

Over recent years, alongside shareholder resolutions on climate issues, there has been a growing number of climate votes submitted by management. These are often asking shareholders to approve climate transition plans or progress reports. During 2022, we voted on 40 management proposals and 94 shareholder proposals, specifically on climate. For case studies and more details on how we voted in 2022, please see our Net Zero Stewardship Report.

Advocacy

Advocacy is typically a collective undertaking. Working in groups with other investors, we encourage public policies focused on achieving net zero emissions. For investors, the effectiveness of corporate engagement to encourage the climate transition is limited by holding size and the resources needed for individual or collective engagement. Public policy intervention, however, can bring widespread, systemic improvements. We believe government and public sector advocacy forms a core component of any comprehensive net zero strategy and is therefore central to our Net Zero Stewardship Programme.

In 2022, our advocacy activity was mostly through participating in a variety of industry initiatives. Examples are detailed in table 1. We also work collaboratively with our parent company, Royal London Group, and with select clients to maximise our collective impact as an organisation.

Table 1: Royal London Asset Management participation in industry initiatives

Organisation	Our Role	Key activities in 2022
Investment Association (IA)	• Sustainability Committee member. • Participant in the climate change working group.	• Reviewed draft SDR and provided feedback for discussion and consultation papers, including defining sustainable and impact investing. • Defining impact investing in public and private markets.
Institutional Investors Group on Climate Change (IIGCC)	• Utilities sector working group (co-chair).	• Contributed to a letter for European utilities on energy security and affordability considerations and proactive lobbying for climate policies. • Provided feedback to sector methodologies (banks, oil and gas).
Climate Financial Risk Forum (CFRF)	• Main forum member. • Transition to net zero working group participant.	• Contributed as members of the forum and participants in its transition to net zero working group. • Supported and provided feedback on the following three publications as a member of the Transition to Net Zero working Group: – mobilising investments into climate solutions; – disclosures, managing legal risk; and – a carbon budget primer for financial institutions. • In 2023, we are also contributing to the Treasury's TPT work through our participation in the asset managers working group. • These publications and more details on the CFRF can be found on the FCA website.
Financing a Just Transition Alliance (FJTA)	• Member of the main forum.	• 'Making transition plans just' report published. • Contributed to a tool for integrating a Just Transition in banking and investing activities launched at the COP27.

The just transition is an important concept in our climate advocacy, as well as our corporate engagement. We have worked on the social implications of climate change in collaboration with industry bodies including the FJTA, International Labour Organisation (ILO), Interfaith Centre of Corporate Responsibility (ICCR) and Ceres investor network.

We also respond to industry consultations independently. In 2022, this included responding to calls for evidence on the UK Net Zero Review and TPT and the International Sustainability Standard Board (ISSB) consultation on their proposals for sustainability disclosure standards. We signed joint statements including the World Benchmark Alliance's (WBA) statement on just transition and the oil and gas sector and the 2022 Global Investor Statement to Governments on the Climate Crisis for the COP27 climate summit in Egypt.

The case for climate collaborative engagement and advocacy

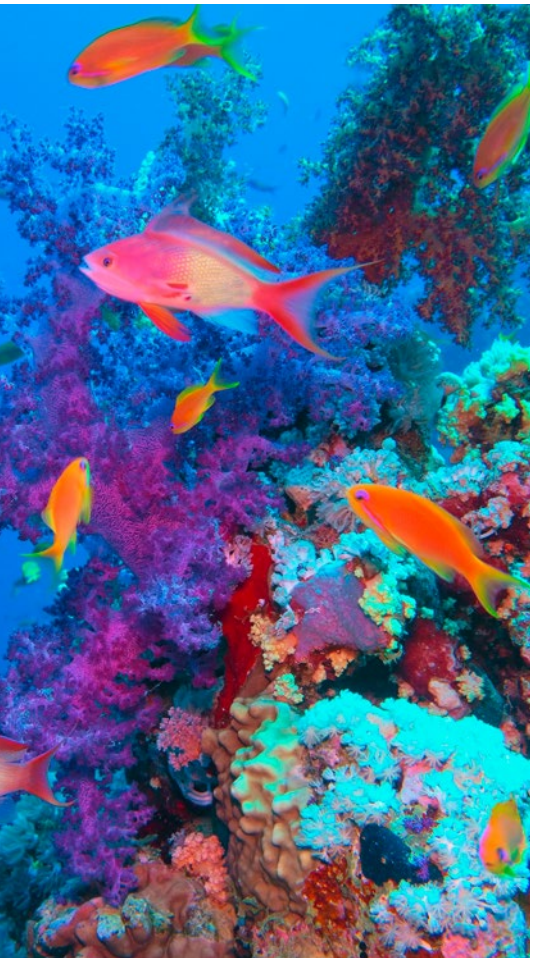
The emissions from the companies we invest in are likely to occur regardless of our holding of the company. Investors may think that they can increase the cost of capital for a company by either selling completely or at least reducing their exposure, but while there is some evidence that this can happen, we believe that acting in this way will do little to significantly decarbonise the real economy. Overall, our climate impact through underweights or divestments is limited.

It could be argued that the impact we, as a relatively small investor in each company, can have on the overall transition to a low carbon economy may be limited. However, by collaborating with other investors, our influence becomes more significant. This is why we are proponents of collaborative engagement and public policy intervention through investor advocacy and see it as critical in achieving real-world emission reductions.

Developing climate solutions

Developing climate solutions that will allow our clients to invest in the low carbon transition is a key priority at Royal London Asset Management. In 2022, we launched the Global Equity Transition Fund, which invests across global equity markets to provide investors with exposure to companies that can make a real contribution to the transition to a more sustainable world.

Expanding the range of climate solutions available for our clients is a key priority for our business. For example, we have converted our range of passive portfolios to a range of tilt funds which aim to reduce carbon emissions. We have ambitions to expand this range and to enhance the methodology that underpins the carbon reduction and to develop meaningful climate solutions across our range of asset classes that meet our client needs.



Spotlight: transitions and tilts

Our ambition is to offer our clients a choice of paths towards net zero to suit different needs and risk profiles. Our transitions and tilt strategies offer two alternatives for climate-conscious equity investors. Tilt strategies, like traditional passive strategies, seek similar risk and return profiles to underlying equity indices. However, they have a second set of objectives based around carbon intensity reduction, responsible stewardship and other ESG criteria. In August 2021, we moved from a passive index approach to ESG tilted strategies incorporating risks factors. These have reduced their weighted average carbon intensity (WACI) by approximately 22% (to 31 December 2022).

Our Transition funds aim to support climate transitions by investing in companies transitioning their business to a more sustainable path ('improvers'), or enabling someone else's transition ('enablers'), or both.

Property: net zero pathway

Royal London Asset Management published a net zero carbon pathway across our property funds in 2021, which complements our net zero strategy for equities and fixed income assets. For property, we aim to achieve net zero by 2030 for our directly managed property assets and developments[ix] and by 2040 for our indirectly managed property assets[x]. In setting these targets, we are responding to the demand being seen from policymakers, investors, clients and occupiers to reimagine the future of the built environment as one that is positive for people and the planet. We are also making this commitment because it aligns with our belief that we must effect change on the issues that matter most — including climate change.

To undertake this ambitious approach, we assessed the carbon impact of our property portfolio and estimated what reductions and interventions will be needed to meet our net zero plan. We have identified ways that we can reduce embodied carbon and operational energy used for standing assets and new developments. We are also planning to increase on-site renewable energy capacity, purchase off-site renewable energy to help run our buildings and investigate a carbon offsetting strategy.

With the direction of travel outlined, we have developed a detailed delivery plan for achieving net zero carbon that has concrete actions for the short, medium and long term. We are now starting to embed this action plan into our governance structure, acquisition process, leasing strategy, property management approach and development pipeline.

ix Directly managed property assets are those which RLAM has complete operational control, greater than 50% equity share and joint ventures where they would cover the proportionate amount of emissions. Developments are any new development or major refurbishment that comes online from 2030 onwards.

x Indirectly managed property assets are either partially managed by RLAM or managed wholly by the occupier.

Governance

Board oversight and committee structure

Royal London Asset Management Holdings Ltd (RLAMHL) and its subsidiaries Royal London Unit Trust Managers Ltd (RLUTM Ltd) and Royal London Asset Management Ltd comprise the Royal London Asset Management Group. They are wholly owned subsidiaries of RLMIS and form part of the Royal London Group. The Royal London Asset Management Group forms the asset management division of Royal London Group.

The Royal London Asset Management Ltd Board ('the Board') is responsible for promoting the long-term sustainable success of the company while taking account of interests and relationships with its stakeholders and the impact on the environment. The Board, led by the Chair, has ultimate responsibility for setting our risk appetite.

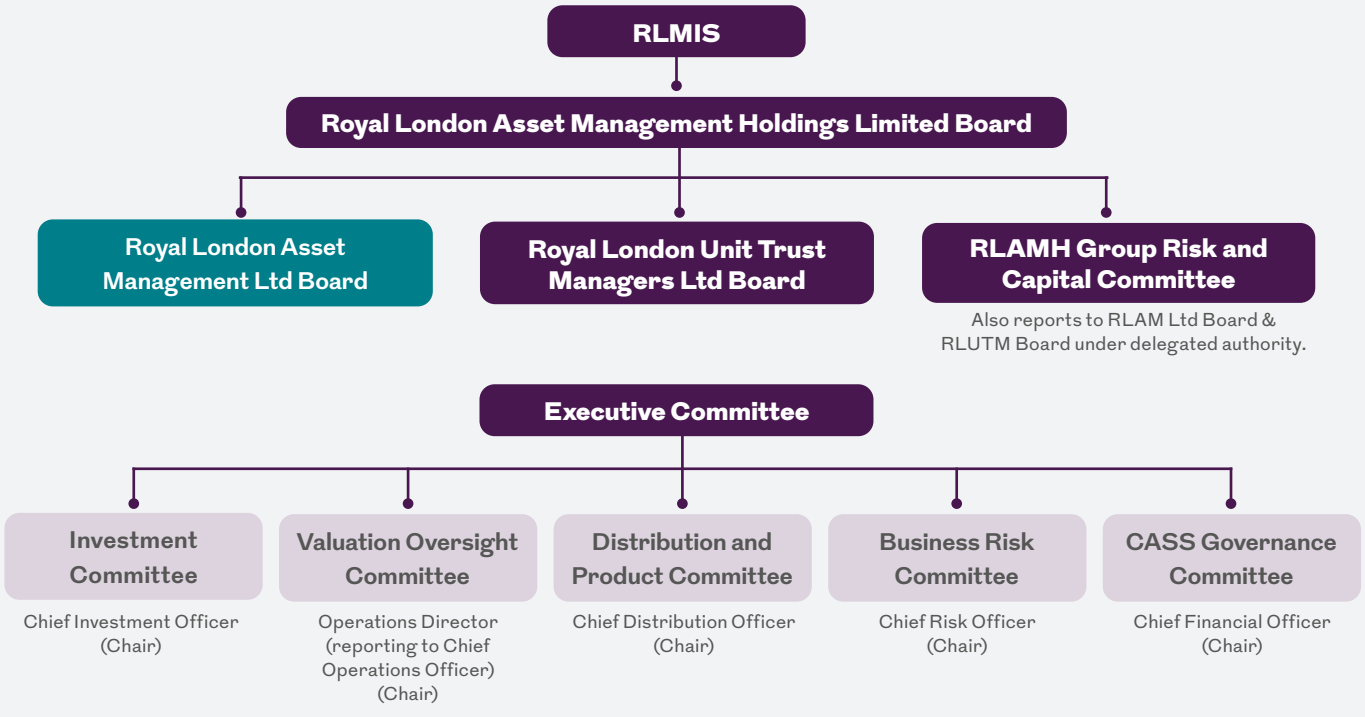
Day-to-day management is delegated to the CEO who is supported by our Executive Committee, which is responsible for ensuring we achieve our climate commitments. The Executive Committee approved our net zero commitment in early 2021 and is involved in setting out our stewardship programme.

Climate change can also present a strategic opportunity for firms and their clients. The Royal London Asset Management Group recognises these opportunities, and climate-related issues are considered as part of the Board's and executive's decision-making processes. In addition, responsible investment, including climate change, is reflected as a key pillar of our business strategy.

The Board and its committees directly engage with and consider key climate-related activities. During 2022 this included:

- a deep dive assessment on 'Delivery of our Climate Ambitions'.
- a deep dive assessment of Property Deploying into Natural Capital, including consideration of how investments could efficiently deliver our net zero carbon goals.
- assessment of our 'Path to Net Zero'.
- approval of our 2021 Stewardship and Engagement report.
- approval of our 2021 TCFD report.
- consideration of climate change scenarios in respect of our Internal Capital Adequacy and Risk Assessment (ICARA) 2022.
- set up of our Responsible Investment Steering Committee.

Figure 8: Royal London Asset Management governance structure



Remuneration

Royal London Group's incentive framework, which covers Royal London Asset Management, aligns outcomes to delivery of key strategic objectives. The framework includes a Short-Term Incentive Plan (STIP), which applies to the majority of colleagues and aims to focus participants on the in-year results that need to be achieved to meet the Group's annual objectives. There is also a Long-Term Incentive Plan (LTIP), which aims to align Group executives with the long-term interests of members and customers through the delivery of the Group's long-term strategy. Both incentive plans align to scorecards with measures and targets set annually by the Remuneration Committee and include progress against our climate commitments. Details can be found in the Directors' remuneration report in the Royal London Annual Report and Accounts.

Progress against our climate ambitions was included in our 2022 STIP scorecard as one of the 'major projects' expressed by progress against sustainability and stewardship ambitions. Sustainability is also integrated into other measures with the STIP scorecard, such as assessment of risk and risk culture.

In 2022 'sustainability' was included as a measure in the LTIP scorecard with an overall impact on the scorecard of 10%. It incorporates a specific measure of reduction of CO_2e emissions in line with the time frame outlined by our climate commitments. This also includes progress in securing Just Transition plans for our top investee companies by the end of 2024 and implementing agreed diversity and inclusion strategies. Performance against Royal London's climate change strategy also accounted for 10% of the 2021 LTIP scorecard.

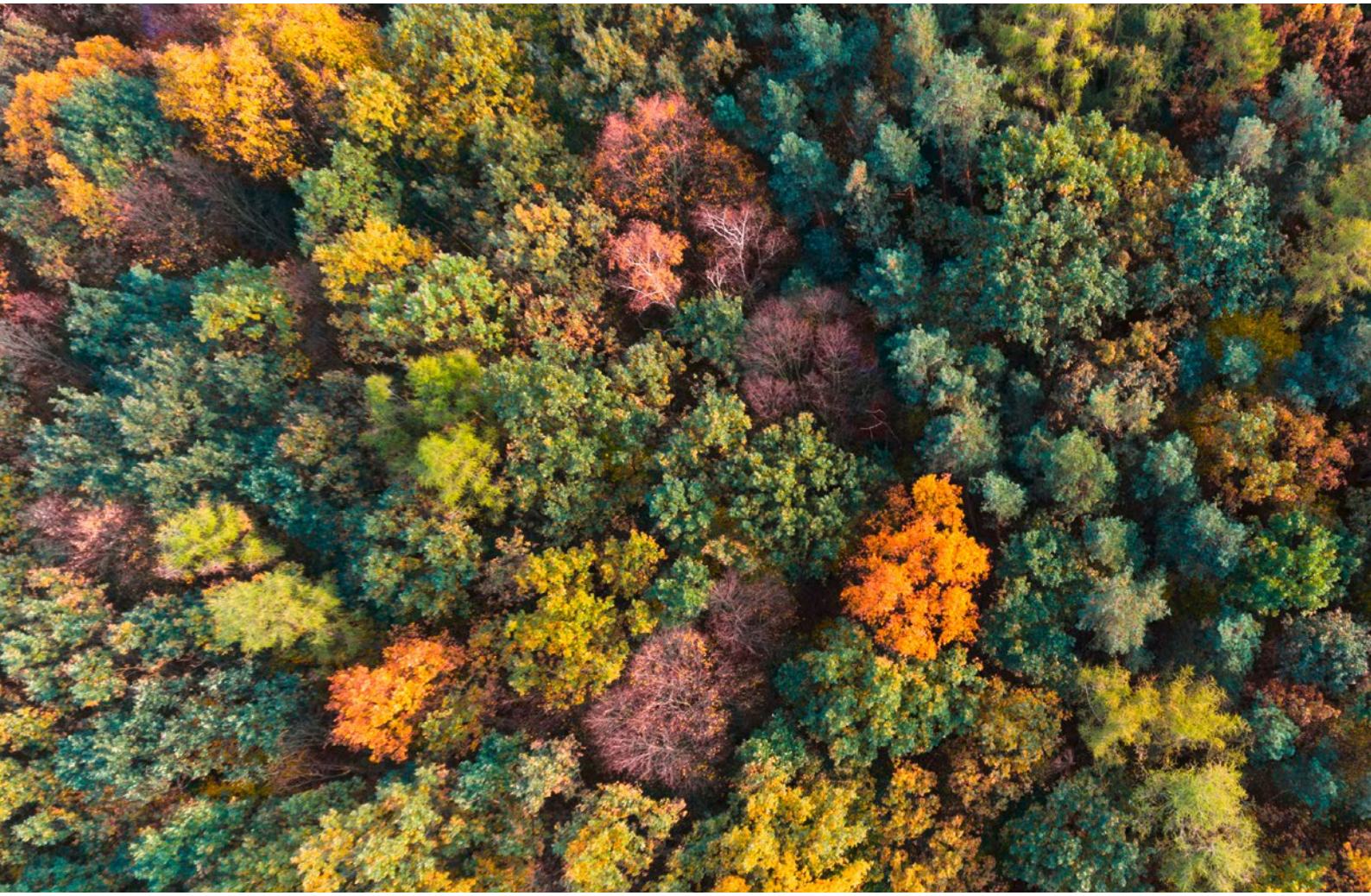
Table 2: Royal London Asset Management climate risk governance and responsibilities

Role	Climate Related Responsibility
RLMIS Board	The RLMIS Board has the ultimate responsibility for the way that the Royal London Group manages its response to climate change. For more information, see the Climate section on page 24 of the Royal London Annual Report and Accounts.
Royal London Asset Management Limited Board	Overall responsibility for agreeing Royal London Asset Management's approach to climate risk.
Executive Committee	The Executive Committee is responsible for the day-to-day management of climate change risks and opportunities across Royal London Asset Management.
Risk & Capital Committee (RCC)	The RCC undertakes capital and risk oversight on behalf of all Boards of the RLAMHL as shown in figure 8. It is chaired by the Royal London Asset Management Holdings Limited Board Chair. The Committee is responsible for monitoring and reviewing the effectiveness of risk and capital management, and internal control systems. It also provides advice, oversight and challenge to embed and maintain a supportive risk culture. The RCC regularly reviews strategic risks, including our strategic risk centred on ESG and climate change.
Investment Committee (IC)	Chaired by the CIO, the IC is responsible for monitoring, oversight and advice to the CIO on investment matters as they relate to responsible investment and climate change.
Chief Investment Officer (CIO)	Senior Management Function with Executive Committee responsibility for RI, including climate change. The CIO has ultimate responsibility over climate risk.
Head of Asset Class and all investment managers	Responsible for ensuring material ESG risks, including climate risks, are considered within investment decisions and for contributing to engagement and proxy voting decisions.
Head of Responsible Investment and the Responsible Investment team	Provides subject matter expertise, support, information, data and analytics to the investment teams and oversees day-to-day implementation of engagement and proxy voting activities across all asset classes. Product owner of the ESG Dashboard.
Head of Climate Transition	Key subject matter expert responsible for advising on the strategic, commercial and investment impact of climate risk end-to-end across the firm in collaboration with investment, distribution, operations and risk teams.

Climate training

Our investment teams receive a mix of practical on-the-job and formal ESG training. In 2022, this included sessions focused on net zero and climate change and sessions to understand the Climate Value at Risk (C-VaR) model's key assumptions and the potential implications on investments. Ongoing engagement between our investment teams and ESG specialists provides practical training for fund managers and credit analysts on climate-related issues. We also undertake other formal training sessions, such as workshops, with our specialist research providers, or internal training conducted by our Responsible Investment team. We also run lunch and learn sessions for all interested colleagues and master classes with front office and distribution teams.

We are expanding our ESG and climate change training programme in 2023. This will include developing net zero training for client-facing colleagues, investment professionals, Board and Executive Committee members. The training will be tailored, taking into account the level of climate expertise required for their role. Sessions will be delivered from mid-2023 onwards. Our teams will also be certified through accreditation from the CFA. All key roles will be CFA ESG-certified.



Risk Management

We consider climate change to be a key strategic risk to our business. We define it as being a failure to respond sufficiently to climate change, which may result in our business being negatively impacted. This may arise from:

- a lack of investment capability and insight;
- a lack of appropriate products and propositions to meet client needs; or
- the physical impacts of climate change negatively affecting our property investments.

Integrating climate risk into our risk management framework

Our risk management framework is used to manage our exposure to all known or expected risks and ensure our business performance is not undermined by unexpected events. As part of this framework, we define risk strategy, risk appetite and policies which set out the objectives, limits and tolerances within which the Board expects the business to operate. This approach provides assurance that the risks to which Royal London Asset Management may be exposed are being appropriately identified and managed within risk appetite, while the impact is being minimised.

Climate and ESG are integrated as a principal strategic risk within our risk management framework, which applies to all risks that arise from our own business activities and operations. This has helped us move towards having a holistic approach to climate risk management which is both bottom-up (where we assess this as part of our ESG integration) and top-down (assessing as a principal risk).

This risk framework consists of three layers. First, we define categories of risks that affect our business, such as climate change. Second, the risk appetite statements explain how much exposure we accept in each category. The third layer comprises risk metrics and tolerances that measure our exposure against our risk appetite. Each metric has a level that triggers an early warning that we are approaching risk appetite limits.

We have a clearly defined risk appetite statement for climate and ESG risk, incorporating specific metrics that assess our position against our stated risk appetite. We review the framework at least annually. Any areas of concern identified from risk metrics are escalated to the Board.

'Three lines of defence' framework

Our risk management governance is based on the 'three lines of defence' model. Primary responsibility for risk management lies with the business. Each function within Royal London Asset Management owns a risk register identifying that function's key risks, including climate and ESG risks. A second line of defence is the Risk and Compliance function acting independently from our executive management to oversee the effectiveness of the company's risk management. A Group-wide Internal Audit function represents the third line of defence, ensuring that Royal London Group's risk management, governance and internal control processes are operating effectively. This provides a level of independent assurance and has a reporting line which is independent of executive management.

How we identify, assess and manage climate-related risks

Emerging risk assessments

As part of Royal London Asset Management's risk management and identification processes, emerging risks are assessed within a dedicated forum which identifies emerging risks that could impact Royal London Asset Management's ability to carry out its business, execute its strategy and service its customers. Where these risks are considered to have crystallised, they are incorporated within Royal London Asset Management's risk registers, then monitored by assigned risk register owners.

These are classified as an opportunity, a threat, or both, and evaluated as being less than or more than two years away.

Figure 9 provides an example of how emerging risks associated with ESG and climate-change are monitored and compared to other emerging risks.

At present, we are monitoring specific emerging risks around meeting client requirements on ESG and net zero commitments, as well as evolving regulatory approaches to ESG and net zero. We are also working on approaches to mitigate these risks. For this purpose, we have included additional metrics to reflect reductions in carbon emissions, based on the assets we manage and our just transition interactions with investee companies. These metrics reflect the evolutionary nature of this process. They are monitored by clearly assigned owners in Royal London Asset Management, reported as part of emerging risk reporting to the Royal London Asset Management Executive Committee and form part of the Chief Risk Officer's reporting to Royal London Asset Management and Royal London Group.

Strategic risk management

The strategic risks associated with climate change are monitored and managed as part of our Internal Capital and Risk Assessment (ICARA). The ICARA is used to determine the potential impact of material harms identified across Royal London Asset Management's risk profile on Royal London Asset Management's business plan. The impact of climate change transition risk and responsible investment are examined as one of the scenarios in the ICARA stress testing process.

The scenario examines the potential impact of increasing climate-related reporting requirements and client expectations to integrate ESG and climate change into the investment decision-making process. It quantifies the risk of falling behind our competitors in achieving this integration and the resulting negative impact this could have on our company's financial position over the duration of our Business Plan.

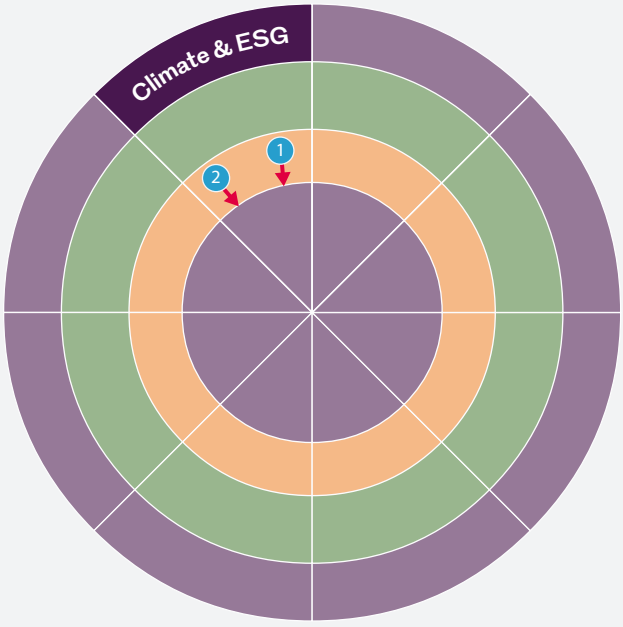
Figure 9: Royal London Asset Management Emerging and Strategic Risks

> 2 years away

< 2 years away

Moving towards crystallising as a strategic risk since last assessment

Moving away from crystallising as a strategic risk



1	Meeting client requirements on ESG and net zero commitments
2	Lack of consistency of ESG rules internationally

Source: RLAM, for illustrative purposes only.

Note: emerging risks are plotted across the bands depending on how far they are from crystallising, and within the most relevant strategic risk. Arrows are used in the diagram to show the pace and direction of change. Arrows are colour coded red (moving towards crystallising as a strategic risk since last assessment) or blue (moving away from crystallising as a strategic risk).

Those emerging risks moving into the centre become part of current strategic risk considerations.

Investment risk management

Climate change might affect investment returns on assets we manage for our clients. In our approach we integrate material ESG analysis, including climate change, into our investment process to support and enhance risk-adjusted returns. We seek to address and mitigate climate investment risks in three ways:

- ensure climate risk is integrated into our risk framework;
- integrate material ESG issues, including climate risk, into our investment decision-making; and
- actively steward our clients' capital and use proxy voting and engagement as tools to highlight potential climate risks and influence company, tenant and regulator behaviour, as described in the Strategy section of this report on Page 8.

In 2022 we re-examined the way we identify and manage climate-related investment risks. We improved our in-house data and IT systems, enabling us to report climate metrics to our clients based on consistent climate information for all our funds. These improvements have resulted in us producing more auditable, replicable, comparable disclosures that are based on automation and systematic data processes. For example, this enabled us to restate our financed emissions in 2022, discussed on page 30. We are also working towards developing a climate transition plan, as discussed on page 8.

Operational risk management

Operational risk resulting from climate risk is managed in partnership with our parent, Royal London Group, through shared services, infrastructure and the buildings we operate from. More detail can be found in the Royal London Group TCFD report.

Property investment risk management

Across real estate, the impacts of climate change, the metrics used to measure these and the management response required, differ significantly from other asset classes. The typical lifespan of property assets, the speed of change in portfolios and the complex technical nature of interventions requires long time horizons when assessing climate-related risks and opportunities and our strategic response to these. Climate models forecast an increase in the impacts of climate-related physical risks in the future, such as increased damages from flooding and overheating. Simultaneously, the UK's shift to a low carbon society will require an increase in regulations, including the introduction of a Minimum Energy Efficiency Standard (MEES), which requires improvements in designed energy performance and real estate markets pricing in operational performance.

During 2022, as part of our increasing focus on climate-related risks and opportunities, Royal London Asset Management Property have carried out a thorough review and impact assessment for property-specific climate-related physical and transition risks and opportunities. These have been identified and prioritised and, for the most material risks and opportunities, the potential financial impact has been assessed with mitigation and management responses identified. In addition, Royal London Asset Management Property have undertaken qualitative scenario analysis, considering a range of potential future climates to understand how resilient our strategy is to the potential impacts on our portfolio. We intend to publish the details of this work later this year in a property-specific TCFD-aligned report with Royal London Asset Management Property's Net Zero Carbon Pathway Progress Report.

Climate risk and opportunities assessment

Tables 3 and 4 show our qualitative assessment of the climate-related risks and opportunities that may impact our business. Each climate-related risk that we identify is assigned one or multiple timeframes:

- **short term:** less than one year
- **medium term:** one to five years
- **long term:** longer than five years

These timeframes are used as an indicator of when we expect that risk to impact our business. This supports our risk management response, prioritisation and mobilisation.

Table 3: Climate-related risks assessment

Risk category	Risk impact	Sub category	Potential impact	Timeframe
Strategic (Emerging)	Transition	Reputation	Meeting client requirements on ESG and net zero commitments – growing expectations around ESG investing paired with difficulties around data availability pose challenges to meet specific client objectives and Royal London Asset Management's net zero commitments.	S
	Transition	Reputation	Lack of consistency of ESG rules internationally – this could result in selling products in new jurisdictions becoming more challenging due to product labelling rules and other regulatory requirements.	S
Investment[1]	Transition	Policy	Action from Regulators and Government to meet the Paris Agreement targets and respond to public sentiment may lead to significant market repricing of asset values and increase the risk of counterparty default.	S, M, L
		Market	Disruptive green technologies may provide a competitive advantage to our peers if we fail to anticipate them in our funds.	M, L
	Physical	Primary	Our investment portfolios contain significant direct investments in physical assets, including property and asset-backed securities, which may be directly impacted by the physical effects of climate change.	M, L
		Secondary	Indirect physical effects from climate change may impact the value of assets in our portfolio, for example due to: supply chain disruption; mass migration; and political instability.	M, L
Investment (Property)	Transition	Reputation	Reduced investments if considered not to be responding effectively or fast enough to climate change.	M
	Transition	Regulation	There is a risk associated with the cost to comply with regulations, including Net Zero Carbon regulations and the associated cost of carbon tax on residual emissions and the UK's current proposed MEES regulations.	S, M, L

Risk category	Risk impact	Sub category	Potential impact	Timeframe
	Physical	Acute	There is a risk of disruption to construction as a result of extreme weather conditions. This could also reduce revenue as full occupancy is delayed, as well as increase operating costs from extending construction time and repairing or replacing damaged parts.	L
Operational[1]	Physical	Primary	Weather-related business disruption may become more frequent due to climate change, as a result of: direct impacts to our offices or data centres and those of our suppliers; and/or impact to travel between our offices.	M, L
	Transition	Market	Our ability to recruit and retain talent may be negatively impacted if Royal London's response to climate change is perceived as inadequate by current and potential future colleagues.	S, M, L

Source: RLAM and RLMIS as at 31 December 2022.

Table 4: Climate-related opportunities assessment

Opportunity category	Opportunity impact	Sub category	Potential impact	Timeframe
Strategic	Meeting client requirements on ESG and net zero	Products & services	A growing demand from clients for ESG investing could open opportunities for new products and services.	S
Investment (Property)	Green premiums on rent and asset value from Net Zero Carbon-aligned leased buildings.	Products & services	As occupiers increase their climate ambitions and set net zero carbon targets, the most efficient and green certified buildings will become increasingly desirable, leading to green premiums on rents and reduced voids.	S
	Generate and sell renewable onsite electricity	Energy Security	There is an increased demand for onsite renewable generation. Depending on the size and energy demand of the asset, there is potential to sell excess electricity back to the UK National Grid.	M

Source: RLAM and RLMIS as at 31 December 2022.

[1] This assessment is consistent with the risks and opportunities identified by our parent company Royal London Group. Operational risks and opportunities are managed by the Royal London Group. The climate-related risk and opportunities assessment performed by Royal London Group can be found in its TCFD report and Annual Reports and Accounts.

Metrics & Targets

Our net zero commitments

At the heart of our approach is our commitment to achieving net zero by 2050[xi] and reducing our carbon equivalent emissions by 50% by 2030 for our in-scope assets, using 2020 as the baseline year. Our in-scope assets are those in funds managed and controlled by Royal London Asset Management and segregated mandates where clients made explicit commitments to net zero. Our commitment is based on the expectation that governments and policy makers will deliver on their commitments to achieve the goals of the Paris Agreement and that this action does not contravene our fiduciary duty. We are actively working to support our external clients with assets in segregated mandates where they have made an explicit commitment to achieving net zero, as disclosed to the NZAM initiative.

Our objective is to evaluate and influence through engagement with issuers representing 70% of our corporate financed emissions, by 2030, pushing for adoption of emissions reduction targets linked to science-based sector specific alignment methodologies (such as SBTi, the Science-Based Targets initiative) and climate transition plans. We also expect the proportion of our Assets Under Management (AUM) to be managed in line with net zero to increase over time as a result of client engagement, methodology development in particular asset classes and the development of climate solutions. We will continue reviewing the progress of our implementation and commitments on an annual basis as part of our future Climate Report disclosures.

Portfolio metrics

We use financed emissions (tCO_2e), carbon footprint (tCO_2e/$m invested) and WACI ($tCO_2e$/$m sales) to track progress against our target of reaching net zero portfolio emissions by 2050 and halving our emissions by 2030.[xii] The methodologies used to calculate these metrics can be found in Appendix I.

Over 2022 we observed the following for our Scope 1 and 2 metrics:[xiii]

Carbon footprint

An 11% reduction in our carbon footprint (tCO_2e/$m invested) relative to our 2020 NZAM baseline but a 1% increase year on year from 2021. The latter can partially be explained by a 16% fall in the market value of our investments.

Financed emissions

A 16% reduction in our financed emissions (tCO_2e) since 2020 and 17% reduction since 2021.

WACI

A 28% reduction in our WACI (tCO_2e/$m sales) relative to our 2020 baseline and a 9% reduction year on year.

Whilst the reductions observed show movement in the right direction, there continue to be material constraints in the quality of data. We also do not expect decarbonisation to follow a linear trajectory as many factors, including the emissions time lag described in other parts of this report, are at play. External factors, as well as the outcomes of our actions, can impact our portfolio emissions including macro-economic influences and cyclical trends such as the market volatility caused by the Russian invasion of Ukraine, fluctuations of exchange rates and an increase in activity following Covid-19 lockdowns. As a result, we expect financed emissions, carbon intensity and WACI will fluctuate over time, albeit with a long-term downward trajectory.

Our target does not currently include Scope 3 emissions from investee companies, due to the immature quality of these disclosures. We believe including Scope 3 emissions in our decarbonisation targets could at this point be misleading. However, to prioritise the companies we engage with we use total carbon emissions, including Scopes 1, 2 and 3 to ensure our engagement focuses on a companies' full impact. Our Scope 3 emissions are estimated by our data provider. These are provided in table 5 on page 36.

xi Our intention is to decarbonise our in-scope directly managed funds in line with the real economy. We will also work closely with our segregated clients towards this goal where they have made explicit public commitments to net zero. Our efforts are focused on supporting the decarbonisation of the constituents of our funds through engagement (and not decarbonising our portfolio regardless of the real economy). The commitment is based on the expectation that governments and policy makers will deliver on commitments to achieve the goal of the Paris Agreement. It also assumes this action does not contravene Royal London Asset Management's fiduciary duty to external investors. The commitment is baselined on the year 2020 and is being tracked using Scope 1 and 2 carbon footprint (tCO_2e/$m invested) using EVIC as an attributing factor for our corporate fixed income and equities portfolios.

xii The commitment is based on the expectation that governments and policy makers will deliver on commitments to achieve the goal of the Paris Agreement. It also assumes this action does not contravene Royal London Asset Management's fiduciary duty to external investors. The commitment is baselined on the year 2020 and is being tracked using Scope 1 and 2 carbon footprint (tCO_2e/$m invested) using EVIC as an attributing factor for our corporate fixed income and equities portfolios.

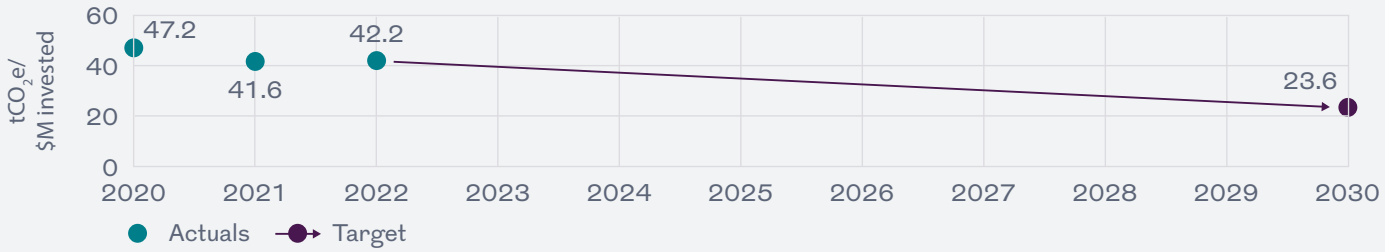
xiii For our in-scope Equity and Fixed Income portfolio.

Progress against our targets

Halving our carbon footprint by 2030

We have committed to reduce the Scope 1 and 2 carbon footprint of our investments by 50% by 2030 (tCO_2/$M invested), relative to our 31 December 2020 baseline.[xiv] We measure the trajectory of emissions from our corporate listed equity and fixed income against our targets.

Figure 10: Royal London Asset Management carbon footprint and reduction target

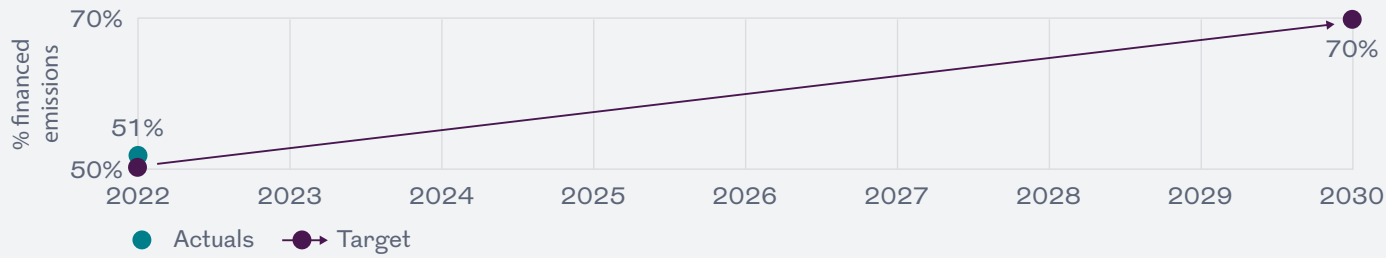


Source: RLAM and MSCI as at 31 December 2022, plot is the target outcome and has not yet been achieved. Trajectory to the target outcome will not be linear.

Scaling net zero engagement

As part of our NZAM commitment, we committed to engaging with companies within our fixed income and equity portfolio that represent 70% of our Scope 1, 2 and 3 financed emissions by 2030. In 2022, the first year of our Net Zero Stewardship Programme, we engaged with 40 companies representing 51% of our financed emissions achieving our initial target of engaging with 50% of our financed emissions. Further details on our 2022 net zero engagements can be found in our Net Zero Stewardship Report.

Figure 11: Royal London Asset Management net zero engagements and targets



Source: RLAM as at 31 December 2022, plot is the target outcome and has not yet been achieved. Trajectory to the target outcome is unlikely to be linear.

Net zero property

For our directly managed property assets we have committed to achieve net zero by 2030 and 2040 for indirectly managed property assets.[xv]

Net zero operational emissions by 2030

For our operational emissions (Scope 1 and 2), Royal London Asset Management, as part of Royal London Group, committed to net zero by 2030. For Scope 3 emissions, excluding category 15 (emissions from our investments), we have committed to a 50% reduction by 2030, reaching net zero by 2050. The delivery of these targets is led by Royal London Group and the disclosure of our metrics and progress to date is reported in its TCFD report.

xiv This commitment is based on the expectation that governments and policymakers will deliver on the commitments to achieve the goals of the Paris Agreement and the required actions do not contravene our fiduciary duty.

xv Royal London Asset Management – The Net Zero Asset Managers initiative

Metrics

Royal London Asset Management's AUM

As at 31 December 2022, Royal London Asset Management managed £147 bn. We analysed climate metrics in the following asset classes: equities, corporate fixed income, sovereign bonds and property. All climate data was collated as at 31 December 2022, with the exception of our property portfolio. The data reported here relating to our property assets is at 30 September 2022 in line with traditional property reporting.

Throughout this report we compare our exposure to these asset classes with composites of relevant equity and fixed income benchmarks. Our analysis of the carbon emissions of our AUM excludes cash, certificate of deposits, commodities and derivatives which have only emerging climate impact assessment methodologies. These excluded asset classes account for 4% of our AUM collectively (shown as 'Others' in figure 12).

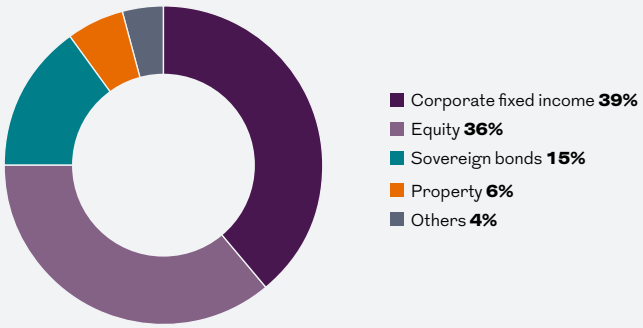
Restating our financed emissions

In 2022 we have updated our data preparation approach in response to evolving industry best practice, regulatory guidance and improvements in data availability. Accordingly, we have recalculated our 2020 (baseline) and 2021 portfolio emission metrics with greater coverage of our AUM. This resulted in an increase in our 2020 and 2021 portfolio emission metrics.

Our NZAM 2020 (baseline) carbon footprint was 45.2 tCO_2e/$m invested when disclosed to NZAM in 2022,[xvi] this compares with 47.2 tCO_2e/$m invested as restated this year. Our 2021 carbon footprint also changed from 36.72 tCO_2e/$m invested to 41.6 tCO_2e/$m invested with this year's restatement. Financed emissions have also been restated for 2021 from 3.0$MtCO_2e$ to 6.6$MtCO_2e$.

We believe these updates have improved the consistency of our historic carbon emissions data. We will continue to use the most appropriate carbon emissions metrics and methodology, in line with best practice, to ensure relevant and transparent reporting.

Figure 12: Royal London Asset Management's assets under management



Source: RLAM as at 31 December 2022.

Enhancing our methodology

Since 2019, we have enhanced the Scope 1 and 2 emissions and revenues data sets for our fixed income portfolios. We believe using our own emissions research process provides us with a more accurate evaluation of climate risks. As a result, the coverage for our fixed income holdings was 81% in 2022, against 63% if we were to use only our external provider's dataset.

This is important for our fixed income funds, where a high proportion is invested in private companies issuing debt.

Emissions from private companies may not be factored into other metrics due to a lack of comparable methodologies for assessing the value of public and private companies. We use our enhanced fixed income data set for WACI and financed emissions. However, we are unable to use this same approach for carbon footprint as we are restricted by the calculation of enterprise value (EVIC for public markets, which includes equity market value) which is incomparable with the 'Equity + Debt' metrics for private companies which is either not being disclosed or includes equity book value (instead of market value). We provide this as an explanation of why data coverage may vary between metrics.

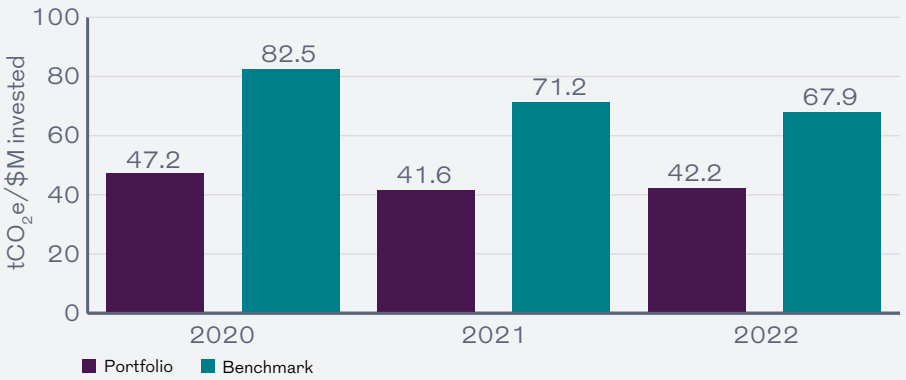
In 2022, we also started to record whether reported data from companies in our fixed income portfolio, which we have collected as part of our emissions research process, has been verified. We found that 29% of reported issuers have verified their Scope 1 and 2 emissions.

xvi Royal London Asset Management – The Net Zero Asset Managers initiative

We will continue to seek the most accurate emissions data with which to report and encourage companies to be transparent on their methodology and seek external verification where appropriate.

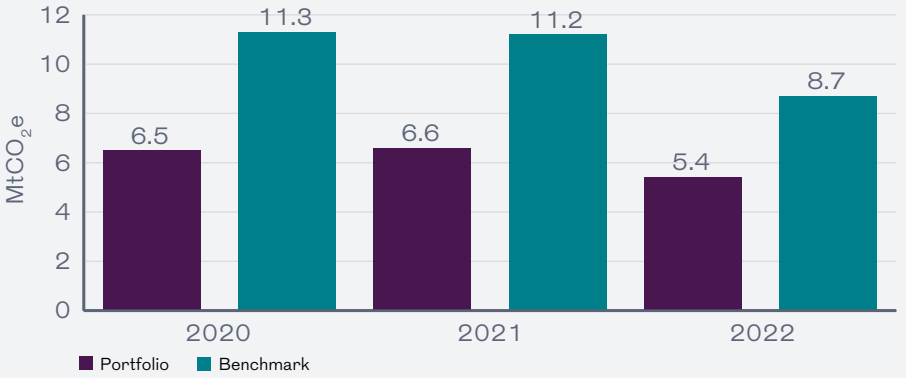
For our property investments, we also updated our methodology for calculating emissions in this reporting year (1 October 2021 - 30 September 22). This included introducing estimates where actual data was not available, which improved our data coverage up to 100% this year. This was done by applying the Global Real Estate Sustainability Benchmark (GRESB) carbon intensity benchmarks to an asset's gross internal area (GIA) and applied primarily to emissions from occupier procured energy. This methodology was also applied to landlord procured energy emissions where appropriate.

Figure 13: Carbon footprint (Scope 1 and 2)



Source: RLAM and MSCI as at 31 December 2022. Portfolio refers to corporate fixed income and equity.

Figure 14: Financed emissions (Scope 1 and 2)



Source: RLAM and MSCI as at 31 December 2022. Portfolio refers to corporate fixed income and equity.

Portfolio emissions analysis

Our interim target focuses on our portfolio's carbon footprint, as recommended by NZAM. This metric tracks Scope 1 and 2 emissions for each US dollar invested through our funds.

Royal London Asset Management's carbon footprint has reduced by 11% since 2020 and is 18% lower than the composite benchmark. However, as shown in figure 13, it did increase marginally year-on-year in 2022, which is in part due to a reduction in our portfolio value over the year. A fall in the carbon footprint of the benchmark was observed between 2022 and 2020.

One of the drivers of this was the war in Ukraine, which resulted in index providers renouncing exposure to Russian companies within their indices. This had the impact of increasing the rate of decarbonisation within the composite benchmark as some high-emitting Russian companies no longer feature as constituents in the benchmark.

Financed emissions are the absolute emissions we have ownership of within our portfolio. This metric is important for monitoring progress against our net zero target and considering the absolute emissions of our portfolio relative to the benchmark.

In figure 14, we provide the total Scope 1 and 2 emissions of our equity and fixed income portfolio and composite benchmark over the last 3 years. The Scope 1 & 2 financed emissions of our portfolio fell from 2020 to 2022, although by less than the benchmark.

What is behind changes in portfolio emissions in 2022?

Whilst our carbon footprint and financed emissions have fallen overall since 2020 as shown in figure 14, our carbon footprint did increase marginally in 2022 against 2021's values as shown in figure 13. We expect there will continue to be fluctuations in both our carbon footprint and financed emissions over the coming years, with an overall downwards trend.

There are two main factors that can cause changes in financed emissions. The first is changes in portfolio emissions resulting from divestments and changes in asset allocation decisions, including stock value changes and currency fluctuations. The second can result in a reduction of emissions within the underlying investee companies themselves and therefore within the real economy.

In 2022, carbon intensive sectors such as energy and diversified mining were financially attractive. As a result, our fund managers, particularly our equity fund managers, tilted towards investing in the energy and materials sectors to benefit from the immediate financial upside. Exposure to high-emitting sectors also increased in the benchmarks we use. However, while our exposure to materials and energy sectors increased by more than the benchmark since 2020, our exposure to the utilities sectors reduced by more than the benchmark since 2020.

Emissions grew globally in 2022 by 0.9%, a much lower growth than the 6% rebound from 2021 post-pandemic emissions (IEA, 2023). Regional differentiation showed emissions declining in Europe and increasing in the US, the biggest markets where we invest.

We endeavour to support emission reductions in the real economy and not just the decarbonisation of our portfolio. A challenge faced across the industry is in the timeliness of available climate data. Data providers are largely reliant on reported company data, which means that the data we receive often suffers from a time lag as explained above. As such, we try to augment data providers' lagged data with current public information through in-house analysis and company dialogues to obtain as complete and up-to-date of an understanding of emissions as possible. This is an industry wide limitation to the use of third-party data providers; however, given this lag is a consistent feature, we are still able to make year-on-year comparisons.

Over time and through our evaluation of companies against out 12 net zero indicators, we are integrating transition considerations into our analysis as described in the Strategy section of this report. This input is important to contextualise these backward-looking climate metrics. High-emitting investments such as those in the materials, energy and utilities sectors may be supported where credible transition plans are in place as they are a key component in the decarbonisation of the real economy. We use engagement to encourage this, particularly with our highest-emitting holdings.

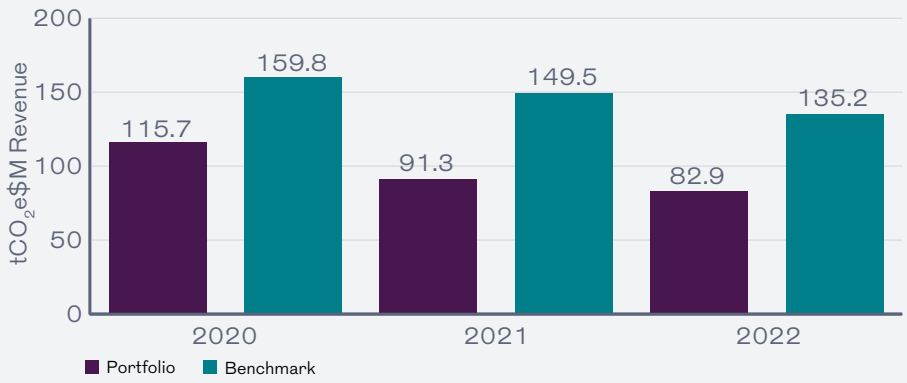
Weighted Average Carbon Intensity (WACI)

We monitor the WACI of our equity and fixed income portfolios as a method of evaluating how efficient our investments are at using CO_2 and its equivalents as a resource in generating revenue. In this regard we can compare the emissions efficiency of our portfolio with that of the composite benchmark and track these measurements over time.

The carbon intensity profile of our fixed income and equity portfolio, along with that of the composite benchmark, is provided in figure 15.

In 2022, Royal London Asset Management's WACI was 83 tCO_2e/$M revenue, 39% lower than the benchmark. From 2020 to 2022, the benchmark WACI reduced by 15% compared to a 28% decrease in the WACI of our portfolio.

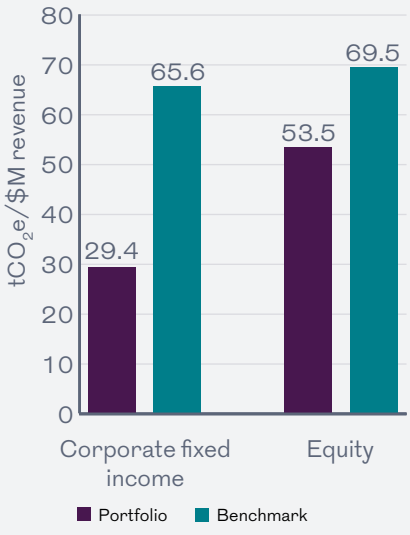
Figure 15: WACI (Scope 1 and 2)



Source: RLAM and MSCI as at 31 December 2022. Portfolio refers to corporate fixed income and equity.

Figure 16 provides a further breakdown of the WACI of our portfolio in 2022. It shows that the WACI of our fixed income portfolio was 55% lower than the benchmark and our equity WACI was 23% lower than the composite benchmark. Figures 17 and 18 show how the different sectors we are invested in contribute to the total WACI in both our fixed income and equities portfolios. The contribution of these sectors to the WACI of our composite benchmark is similar to that of our portfolio. As with our benchmark, the key sectors contributing to our equity portfolio WACI are energy, materials and utilities. The contribution of sectors to our fixed income WACI are also broadly in line with the benchmark, with utilities being the main contributor. The contribution of supranationals to our fixed income WACI is lower than the benchmark, which is due to our limited exposure to this issuer type.

Figure 16: 2022 WACI (Scope 1 and 2)



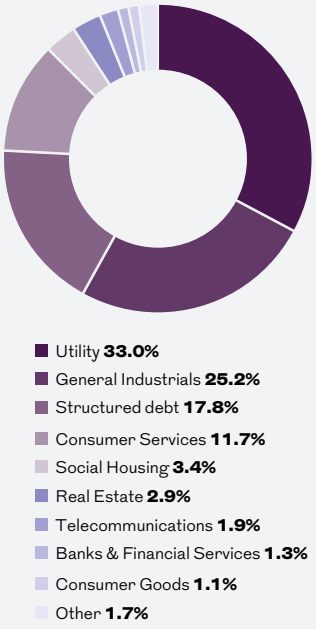
Source: RLAM and MSCI as at 31 December 2022.

Our analysis shows that 20 individual securities within our equity portfolio are responsible for 50% of our reported WACI. The WACI within our equity portfolio is intensified by investments within the energy and materials sectors. The top five most carbon intensive holdings within our portfolio account for over 25% of our reported WACI. Shell is our most carbon-intensive holding, attributing nearly 10% towards our total WACI.

For the fixed income portion of the portfolio, most emissions arise from the utilities sector, with 19 companies representing 50% of the fixed income portfolio WACI. This exposure represents the trade-off between decarbonisation of our portfolio and of the real economy, as providing debt to National Grid, Enel & EDF results in these firms showing as our top emitters, even though they are leading the way on real world decarbonisation and a more renewable future.

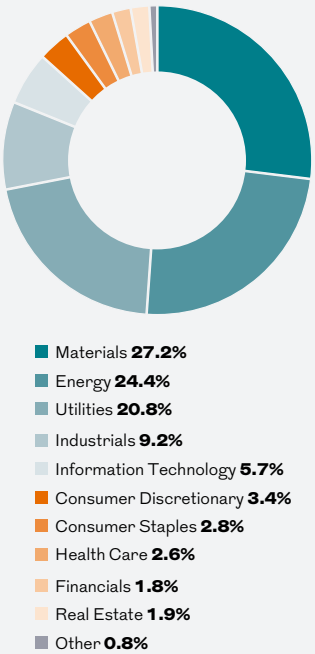
It is important to note that WACI is just one of the metrics we use for internal evaluation of climate risk. We will continue to increase the number of KPIs that we use to give us a more holistic view of our impact on climate change, including the use of forward-looking metrics.

Figure 17: RLAM Corporate fixed income portfolio WACI split by sector



Source: RLAM and MSCI as at 31 December 2022. Please note that values may not add to 100% due to the nature of rounding.

Figure 18: RLAM Equity portfolio WACI split by sector



Source: RLAM and MSCI as at 31 December 2022. Please note that values may not add to 100% due to the nature of rounding.

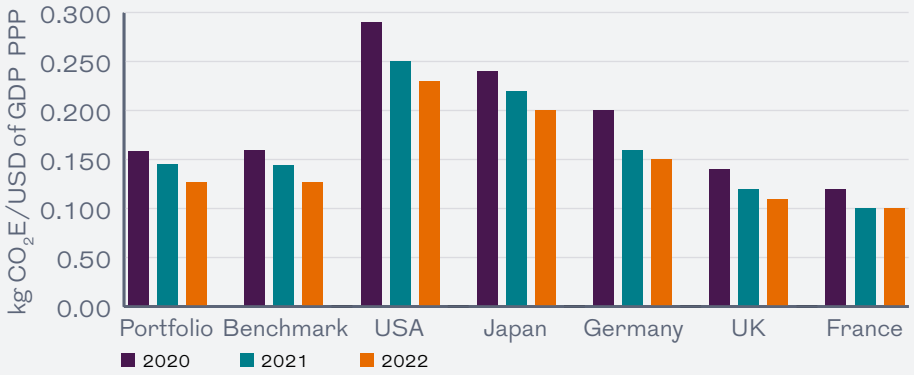
Sovereign debt

Climate risk within a sovereign bond portfolio can be monitored by its impact on a country's ability to repay its debt. This is more complex than assessing climate risk within corporate credit. However, national emissions inventories are widely available as countries report their contributions to climate change to the United Nations. Known as production emissions, sovereign states report emissions occurring in their respective territories. We can therefore compare issuers' carbon emission intensities.

Figure 19 shows that the carbon intensity of Royal London Asset Management's sovereign debt portfolio is slightly lower than the composite benchmark, while both have fallen since 2020. Both the portfolio and composite benchmark are similarly skewed towards investing in UK Gilts (+80% in 2022) and therefore the difference between the two is marginal.

The carbon intensity of UK sovereign debt is low relative to other countries. The UK has ambitious policies in place to support its commitment to reach net zero by 2050. Recent policy activity and advancement towards grid decarbonisation signals that the UK is taking a proactive approach towards climate change policy. If these policies are implemented effectively, they could reduce disruptive transition risk.

Figure 19: Carbon intensity of sovereign debt



Source: RLAM and MSCI as at 31 December 2022.

Property

Monitoring the environmental performance of our property assets is fundamental to tracking progress towards achieving our net zero carbon goals, alongside identifying opportunities to improve the operational efficiency of our assets and create a more resilient portfolio.

Over the 2021/22 reporting period, our Scope 1, 2 and 3 greenhouse gas (GHG) emissions totalled 142,789 tCO_2e. Scope 3 emissions accounted for 94% of this total, with emissions from 'capital goods (including development activities)' being the largest contributor (50% of total GHG emissions). This can largely be attributed to the completion of two of our developments, 3 St Peter's Square, Manchester and BHX8, Redditch, and a major refurbishment at Trafford Park, Manchester, over the reporting period. To reduce our embodied carbon emissions, we have developed an approach to net zero carbon for developments and refurbishments, including considering a 'whole life cycle' approach at design stage and adopting Design for Performance principles.

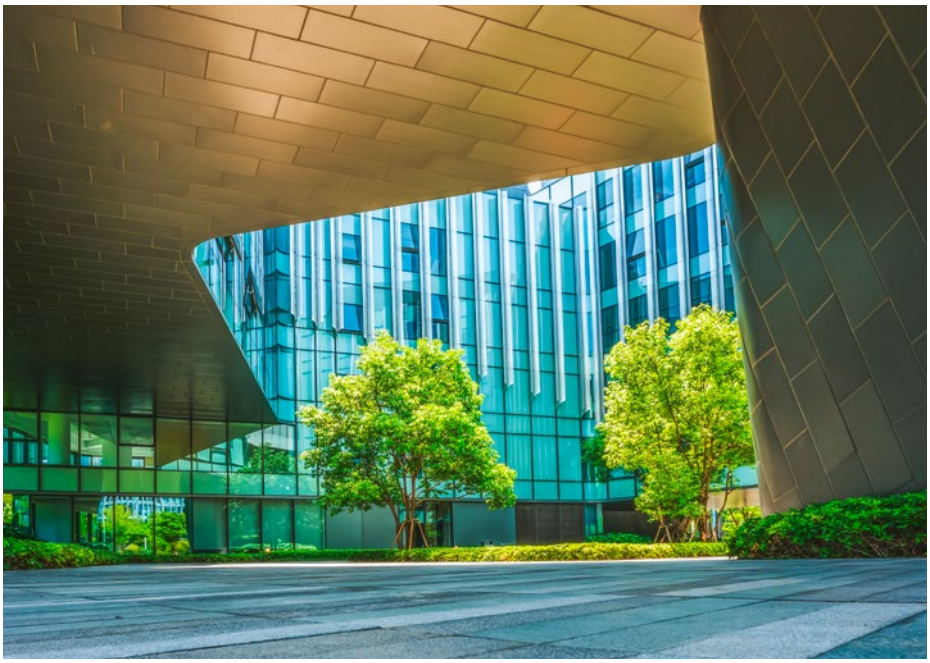
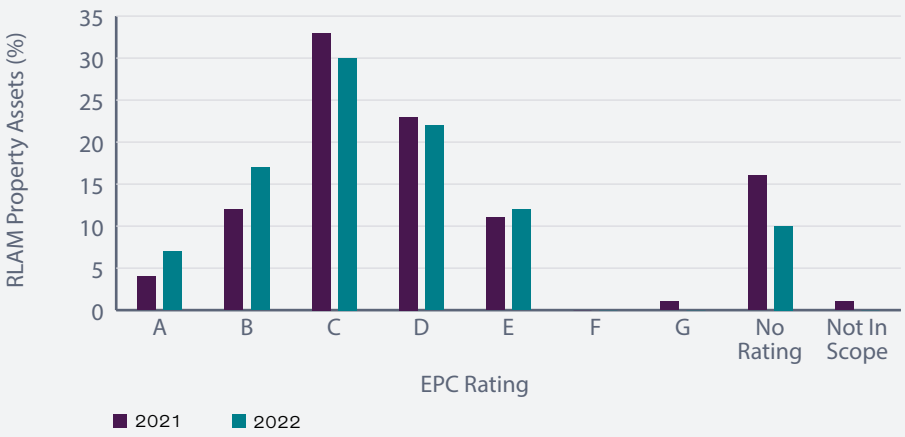


Figure 20: EPC ratings



Source: RLAM as at 30 September 2022.

Property data is traditionally reported over the Q4 of one year to Q3 period of the following year rather than calendar year and reported a quarter in arrears. This is the norm across the property industry and aligns with how we have previously reported our emissions from this asset class. The exact reporting period can vary with fund financial years. The difference in timing is due to the need for consumption data to be collected and validated. Furthermore, our Scope 1, 2 and 3 data from our reporting year of Q4 2021 to Q3 2022 has been assured, providing confidence the figures reported here are as accurate as possible.

Additionally, emissions from energy consumption in occupier spaces contributes to approximately 38% of the 2021/22 GHG footprint of our property portfolio. Royal London Asset Management Property continues to actively engage with its occupiers to encourage the sharing of their energy consumption data, with the aim to continually improve the accuracy of our GHG emissions and reduce reliance on estimates, as well as working collaboratively with occupiers to optimise the operational performance of our assets.

Energy Performance Certificate (EPC) ratings are a key indicator in helping us monitor our exposure to climate transition risk. 89% of our portfolio is covered by EPC ratings. The remainder of the portfolio does not have an EPC rating either due to the ratings lapsing after a 10-year period or the property being out of scope which includes property such as car parks, listed buildings and substations. We are not required to obtain a new rating whilst a property is let and it is our policy to obtain a new rating should the lease expire or we decide to sell the asset.

Under the Minimum Energy Efficiency Standards (MEES), these F and G ratings will need to be improved to a minimum EPC rating of E by 1 April 2023. To address this, we have undertaken EPC Improvement Cost Assessments across assets with an EPC rating of F or G. These assessments generate a set of initiatives to implement that will improve the EPC to a minimum B rating. EPC Improvement Cost Assessments have also been commenced across any asset with an EPC rating of C, D or E. This is in response to the potential legislation requiring all commercial buildings to achieve an EPC B rating by 2030, minimising risk across the property portfolio.

As part of our New Construction & Major Refurbishment Sustainability Standards, we have continued to target a minimum EPC rating of 'A' for all new-build development projects and a 'B' for all refurbishment projects. This performance standard will help to ensure that our overall portfolio EPC rating average improves over time, ensuring we comply with relevant legislation.

Portfolio metrics table

Table 5: Portfolio emission metrics

Metrics	Unit	2020	2021	2022	Year on year change	Change against baseline
Corporate Fixed Income & Equity						
Scope 1 and 2 Emissions						
WACI	**tCO_2e/$M revenue**	115.7	91.3	82.9	-9%	-28%
Benchmark WACI		159.8	149.5	135.2	-10%	-15%
WACI RLAM vs Benchmark		-28%	-39%	-39%		
Financed emissions	**$MtCO_2e$**	6.5	6.6	5.4	-17%	-16%
Benchmark financed emissions		11.3	11.2	8.7	-22%	-23%
Financed emissions RLAM vs Benchmark		-43%	-42%	-38%		
Carbon footprint	**tCO_2e/$M invested**	47.2	41.6	42.2	1%	-11%
Benchmark carbon footprint		82.5	71.2	67.9	-5%	-18%
Carbon footprint RLAM vs Benchmark		-43%	-42%	-38%		
Scope 3 Emissions[1]						
Financed emissions (estimated)	**$MtCO_2e$**	48.8	42.6	45.4	7%	-7%
Benchmark financed emissions (estimated)		65.5	63.2	59.0	-7%	-10%
Financed emissions (estimated) RLAM vs Benchmark		-25%	-33%	-23%		
Scope 1, 2 and 3 Emissions[1]						
Financed emissions (Scope 1, 2 and 3) (estimated)	**$MtCO_2e$**	54.8	48.9	50.8	4%	-7%
Benchmark financed emissions (Scope 1, 2 and 3) (estimated)		76.7	74.3	67.6	-9%	-12%
Financed emissions (Scope 1,2 & 3) (estimated) RLAM vs Benchmark		-29%	-34%	-25%		
Sovereign Debt						
Sovereign financed emissions	**$MtCO_2e$**	5.0	4.2	3.1	-24%	-37%
Benchmark sovereign financed emissions		4.9	4.2	3.2	-25%	-36%
Sovereign financed emissions RLAM vs Benchmark		0.5%	-0.4%	-0.2%		
Carbon intensity of sovereign debt	**$kgCO_2e$/ USD of GDP PPP**	0.16	0.14	0.13	-12%	-20%
Benchmark carbon intensity of sovereign debt		0.16	0.14	0.13	-12%	-20%
Sovereign carbon footprint RLAM vs Benchmark		0.5%	-0.4%	-0.2%		

Source: RLAM and MSCI as at 31 December 2022.

[1] Scope 3 emissions are estimated using the methodology provided in the Appendix II.

Table 6: Data coverage

Coverage metrics (% Holdings)	2020	2021	2022
Financed emissions & carbon footprint Scope 1 & 2	66.5%	72.8%	75.4%
WACI Scope 1 & 2	78.1%	81.1%	89.0%
Financed emissions Scope 3 (estimated)	66.4%	72.5%	75.3%

Source: RLAM and MSCI as at 31 December 2022.

Coverage as % value in portfolio of metrics measuring Royal London Asset Management's corporate fixed income and equity portfolio's GHG emissions. The majority of our Scope 1 and 2 data coverage for 2022 is provided by our third-party data provider, MSCI, the remaining coverage is sourced with internal research from Royal London Asset Management's analysts. The remaining emissions were estimated. These estimates for Scope 1 and 2 data are given by both our third-party data provider and Royal London Asset Management analysts.

Property emissions metrics

Table 7: Property emissions metrics

Fund	AUM (£m)	Absolute (kWh)		Like for Like (kWh)	Energy Intensity (kWh/m²)	GHG Emissions (tCO_2e)				GHG Intensity ($kgCO_2e$/m²)
		Total Electricity	Total Fuel	Total Like-for-Like Energy	Total Like-for-Like building energy intensity by floor area	Scope 1	Scope 2 (location-based)	Scope 3	Total GHG emissions	Total GHG emissions intensity by floor area
Royal London Pension Property Fund (RLPPF)	5,548.5	29,052,061	15,150,856	33,483,860	154	2,418	4,003	108,751	115,172	68
Royal UK London Real Estate Fund (UKREF)	3,493	9,162,166	8,822,894	10,086,613	120	807	1,322	20,670	22,799	32
Royal London Property Fund (RLPF)	422.2	1,432,464	583,059	1,631,150	208	96	231	4,491	4,818	34
Total	9,463.7	39,646,691	24,556,809	45,201,623	146	3,321	5,556	133,912	142,789	56

Source: RLAM as of 30 September 2022.

Property emissions metrics have been provided for 2022 only. This is due to improvements in our methodology in 2022 leading to a higher coverage of our emissions than previous years and therefore the data being incomparable to previous years.

The data presented in this section is taken from 1 October 2021 – 30 September 2022 (Q4 2021 – Q3 2022). This is common practice within the properties management industry and is driven by delays in data availability.

Like-for-like intensity metrics are calculated only where whole building coverage is available to align with the Investors in Non-Listed Real Estate Vehicles (INREV) reporting guidelines.

It relates to internal (Gross Internal Area (GIA)) utilities only. Assets sold or purchased during the reporting period and assets with incomplete data sets have been excluded from like-for-like analysis.

Scope 1 is inclusive of emissions from landlord procured gas (excluding occupier spaces) and fugitive emissions from refrigerants. Scope 2 is inclusive of emissions from landlord procured electricity (excluding occupier spaces). Scope 3 is inclusive of:

- purchased goods and services.
- capital goods (including development activities).
- energy transmission and distribution.
- landlord-procured water emissions.
- landlord-managed waste emissions.
- end-of-life treatment of sold products.
- emissions from energy consumption in occupier spaces.

Energy intensity calculations are inclusive of data from assets which have whole building data and full coverage across the reporting period.

Due to a change in GHG methodologies between the previous and current reporting years, it is not possible to raise direct like-for-like comparisons. Where data has not been available, GHG emission calculations have utilised benchmarks and averages. Total emissions and intensities therefore cover the Gross Internal Area (GIA) of each fund.

Please see Royal London Asset Management Property's Net Zero Carbon Pathway Progress Report (2022) for a full breakdown of Scope 1, 2 and 3 emissions by GHG emission source.

Portfolio alignment

Exposure to fossil fuels and green revenue

This year, we disclose more granular details on our exposure to fossil fuels and green revenue within our corporate fixed income and equity portfolios using data from our third-party provider. These metrics do not measure the total revenue derived from these activities, but instead counts the number of issuers in these portfolios with any exposure to these activities. For definitions of each type of activity please see Appendix II for our methodology.

These metrics can be helpful for indicative purposes in disclosure, although we acknowledge that they are overly simplistic and are therefore we do not use them in investment decisions. We will continue evaluating the metrics we use to track these activities and report more meaningful and granular metrics as they become available.

Exposure to fossil fuels

Table 8: Exposure to fossil fuels

Metric	Percentage of total portfolio	Composite benchmark	Percentage of fixed income portfolio	Percentage of equity portfolio
Oil and gas exposure	8%	12%	5%	12%
Oil and gas extraction and production	4%	5%	1%	7%
Arctic oil and gas production	2%	2%	0%	3%
Shale oil and gas production	3%	7%	4%	6%
Thermal coal production	1%	1%	0%	1%
Metallurgical coal production	1%	1%	0%	2%
Thermal coal generation	1%	3%	2%	1%
Tar oil sands	3%	3%	0%	5%
Biomass energy[1]	3%	4%	3%	4%
Data coverage[2]	86%	91%	75%	98%

Source: RLAM and MSCI as at 31 December 2022. Portfolio refers to corporate fixed income and equity.

[1] The biomass energy data point includes a number of our holdings within the water sector. This is different to the non-renewable sources of biomass energy as it uses the left-over sludge water companies have from treating human waste.

[2] Data coverage according to our data provider MSCI

Royal London Asset Management's exposure to GHG intense activities mainly sits within the equity portion of the portfolio. This is largely due to investments in oil and gas extraction companies. Our oil and gas exposure initially appeared higher than expected because our calculations do not use a revenue threshold and they cover any company that has ownership over reserves, extraction and/or generation. As such, the approach captures a range of oil and gas related companies within the reported figure.

Regarding thermal coal production, the equity portion of the portfolio is more exposed to the mining of coal compared to fixed income which has a greater focus on the use of coal within the energy generation side.

Our third-party data provider has yet to update the 'tar oil sands' figure with the latest policy updates from certain companies, which can impact our reported data. For example, BP currently makes up ~26.5% of the reported figure although they announced their divestment from oil sands in Q2 2022.

Exposure to green revenues

Table 9: Exposure to green revenues

Metric	Percentage of total portfolio	Composite Benchmark	Percentage of fixed income portfolio	Percentage of equity portfolio
Companies with any exposure to climate change solutions	21%	25%	10%	32%
Companies with any exposure to natural capital solutions	7%	7%	2%	11%
Data coverage[1]	86%	91%	75%	98%

Source: RLAM and MSCI as at 31 December 2022. Portfolio refers to corporate fixed income and equity.

[1] Data coverage according to our data provider MSCI

Climate change solutions measures the percentage of companies (by value) held in the portfolio that generate any revenues from renewable energy, energy efficiency or green buildings. Natural capital solutions measures the percentage of companies (by value) that generate any revenues from sustainable water and agriculture and/or pollution prevention (see Appendix II for further detail).

We see a large overlap in the companies with green revenue and fossil fuel exposure. This is because many of the largest fossil fuel companies, such as BP and Shell, are diversifying and expanding their asset base to begin transitioning into cleaner activities such as renewable energy.

Forward-looking portfolio alignment metrics

Whilst it is important to track the current carbon emissions within our portfolio in the context of decarbonisation, it is arguably more important to evaluate the expected trajectory of our investments compared to our ambitions. This section therefore looks at forward-looking metrics, which attempt to evaluate or project the future emissions of a company or portfolio and their decarbonisation pathways. To this end, we report the following metrics:

- Implied Temperature Rise (ITR)
- Science-Based Targets initiative (SBTi) Alignment

Methodologies used to calculate these metrics are provided in the Appendix I.

In addition to these metrics, we monitor the alignment of the companies within our portfolio to the NZIF as part of our Net Zero Stewardship Programme. How these metrics are used in our investment process and stewardship strategy is described in the Strategy section of this report on page 8.

Our ITR metrics show an improving trajectory, with an increase in the number of companies in our portfolio with an implied temperature of below 1.5°C and 2°C. However, this is the first year we have monitored both NZIF alignment and SBTi alignments, so we cannot comment on the trajectory of these metrics. We will continue monitoring these to enable us to assess the trend of our portfolio NZIF and SBTi alignment in future reporting periods.

Implied Temperature Rise (ITR)

We use ITR to track the percentage of our investment portfolio that is operating in alignment with limiting temperature rises to 1.5°C and 2°C. A company's ITR in degrees Celsius (°C) is calculated by considering the targets that the company has set to reaching net zero and the likelihood that these targets will be achieved, given their implemented strategy.

Our reporting of the ITR metric has evolved since our first TCFD report in 2020. In 2020, we reported a warming potential metric, moving to an ITR metric in 2021 as methodologies improved and convergence was promoted by the Glasgow Finance Alliance for Net Zero (GFANZ). This year, we have provided detail on the percentage of our fixed income and equity portfolio by value that has an ITR of below 2°C or 1.5°C. We believe this is a more useful metric than a portfolio-aggregated individual ITR figure, albeit with limitations and assumptions which are provided in Appendix II.

For 2022, the data coverage for this metric was 85%, having increased from 82% in 2021. Currently, 59% of Royal London Asset Management's fixed income and equity portfolios are aligned to preventing warming greater than 2°C by the end of the century, whilst 28% of these assets within our portfolios are projected to support temperature goals of 1.5°C by the end of the century.

Table 10: Implied temperature rise

Metric		2021	2022	Y-o-Y Change
Implied temperature rise below 2°C	% value in portfolio	45%	59%	↑ 31%
Implied temperature rise below 1.5°C	% value in portfolio	19%	28%	↑ 51%

Source: RLAM and MSCI as at 31 December 2022. Portfolio refers to corporate fixed income and equity.

Science-Based Targets initiative (SBTi) alignment

It is vital to us that companies ground their targets in science and align their emission pathways accordingly. SBTi is a partnership between National Government Organisations (NGOs), the Carbon Disclosure Project (CDP), the UN Global Compact, World Resources Institute (WRI) and Worldwide Fund for Nature (WWF) to create a clearly defined pathway for companies to reduce emissions. Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement. Once submitted, SBTi validates a company's targets and determines whether the issuer is committed to near-term (within 5-10 years from submissions) and/or long-term targets. It also verifies if their targets align to either a 1.5°C or 2°C rise.

Table 11: SBTi alignment

Metric	Value
Companies with near term SBTi targets (% value of portfolio)	20%
Coverage	35%

Source: RLAM and MSCI as at 31 December 2022. Portfolio refers to corporate fixed income and equity. Coverage refers to the % value of the portfolio where data is available.

Table 11 shows that 20% of companies by portfolio value in our equity and fixed income holdings have set near-term targets that are SBTi aligned. The majority of these (86%) are at 1.5°C and a minority (14%) have set targets only consistent with below 2°C that have been verified by SBTi. Although we take note of holdings which align with science-based sector-specific alignment methodologies, we do not believe it to be essential for all companies to set a target which is specifically labelled as SBTi. Therefore, this metric is considered alongside our other portfolio alignment metrics to create a holistic view of the trajectory of our investee companies.

Climate change scenario analysis – Climate Value-at-Risk (C-VaR)

Climate change scenario analysis can be used to identify the risks and opportunities associated with climate change and the impact they could have on our investment portfolios. We have performed our analysis using integrated assessment models to calculate the Climate Value-at-Risk (C-VaR) under different scenarios. The C-VaR under each scenario represents the proportion of investment returns at risk of loss due to climate change. Further details on our methodology can be found in Appendix I.

Our analysis includes four scenarios developed by the Network for Greening the Financial System (NGFS), which are used to assess transition risk for our investments under different global temperature trajectories.

We also assessed physical climate risk through two scenarios which look at the impacts these risks could have in the next 15 years in a 'business as usual' trajectory. These scenarios address the chronic risks of extreme cold, extreme heat, extreme precipitation, heavy snowfall and extreme wind. They also address the acute risks of coastal flooding, fluvial flooding, tropical cyclones, river low flow and wildfires.

These scenarios and their key characteristics are provided in table 12.

Table 12: Climate change scenario analysis

Category	Scenario		Scenario Summary
Transition Risks	Disorderly	Divergent Net Zero (~1.5°C)	Net Zero is reached by 2050 but failure to coordinate policy pushes high costs to consumers. Fast action spares us from the worst physical climate impact.
		Delayed Transition (~ 2°C)	Annual global emissions do not decrease until 2030 and are reduced later with reactive policy action. High transition risk and physical risk.
	Orderly	Below 2°C	Net Zero is achieved after 2070. Climate policies are introduced immediately globally and become gradually more stringent. Low transition risk and high physical risk.
		National Determined Contributions (NDCs) (~ 3°C)	Assumes all policies pledged by states to the United Nations are implemented. Emissions decline and transition is not disruptive but continued warming brings severe physical risks.
Physical Risks	Moderate (Average)		The average potential impact on companies' market value, assuming trends in acute and chronical physical risk from a 'business as usual' scenario.
	Aggressive		The worst case (95th percentile) or most severe potential impact on companies' market value, assuming trends in acute and chronical physical risk from a 'business as usual' scenario.

Source: RLAM, MSCI and NGFS.

Financial regulators are stressing the value of climate scenario analysis. However, at Royal London Asset Management, we believe these models are mostly useful to challenge assumptions about possible futures and cannot be used in isolation to support investment decisions in their current form.

In 2022, as part of our work to develop our climate transition plan, we assessed a selection of our funds against C-VaR models from different data providers. Our analysis showed that climate risk was concentrated in high-emitting companies with poor climate transition plans, which is aligned to the conclusion we have reached in our bespoke analysis of companies' emissions and target alignment.

We favour monitoring metrics that help assess 'Paris alignment' over the C-VaR models. Our Paris alignment assessment has fewer assumptions and can be used to reasonably assess a company's emission reduction plan and impact on climate change. Conversely, the Integrated Assessment Models for C-VaR involve numerous socio-economic, policy and technological assumptions on how both the world and each company we invest in may change. We provide further information on the limitations of the scenario analysis in Appendix II.

Results analysis

Table 13: C-VaR of our portfolio under each climate scenario

			Royal London Asset Management			Benchmark		
			2021	2022	y o y	2021	2022	y o y
Transition Risk	Disorderly	Divergent Net Zero (~1.5°C)	-15.8%	-16.6%	-5%	-20.4%	-20.8%	-2%
		Delayed Transition (~ 2°C)	-11.1%	-12.8%	-15%	-14.1%	-15.3%	-8%
	Orderly	Below 2°C	-0.9%	-1.0%	-8%	-1.2%	-1.3%	-6%
		National Determined Contributions (~ 3°C)	-0.5%	-0.6%	-3%	-0.7%	-0.7%	-4%
	% Coverage		67%	68%	2%	72%	72%	0%
Physical Risk	Moderate Scenario		-5.1%	-7.4%	-45%	-5.5%	-7.7%	-40%
	Aggressive Scenario		-8.4%	-11.8%	-40%	-10.0%	-13.3%	-33%
	% Coverage		65%	67%	3%	70%	70%	0%

Source: RLAM and MSCI as at 31 December 2022. Portfolio refers to corporate fixed income and equity. Please note the y-o-y figures may appear divergent from table figures due to the nature of rounding. Units are percentage of enterprise value at risk.

According to this analysis, our exposure to transition risk has increased in 2022. Whilst our CVaR across these transition risk scenarios remains lower than the benchmark, it has worsened by more than the benchmark year-on-year. An increase in our exposure to the materials and energy sectors, as described on page 32, was a driver of this. Disorderly scenarios appear to have a worse impact on both our portfolio and the benchmark than orderly scenarios due to the unexpected, rushed and divergent response of policy makers to the imperative to halt climate change and transition economies to net zero. The current policies promised by governments through the UN process in their National Determined Contributions have a lower impact on our portfolio as it may have already been 'priced in' to the market. Reaching net zero by 2050, which is equivalent to limiting warming to below 1.5°C to prevent the worst physical climate risk, will require an ambitious transition. We believe this scenario would require new policies and technologies across all sectors of the economy and appears the most disruptive for our portfolios.

Keeping the current trajectory, or the current country pledges and reaching around 3°C by the end of the century, will not be as disruptive from a transition perspective. However, the physical impact of climate change at high warming levels will likely result in economic and productivity losses, disruption to ecosystems and irreversible impacts on the planet's living conditions. The potential value-loss in an aggressive scenario of physical risk is only looking into the next 15 years; however, the significant earth system changes are unlikely to materialise for decades. Therefore, we believe this analysis may not capture the full value at risk over a longer time frame.

Sectoral impact analysis

We conducted further analysis of the worst performing Global Industry Classification Sectors (GICS) in our portfolio across the worst transition and physical risk scenarios, the divergent net zero scenario and physical aggressive scenario.

Our analysis across these sectors shows that:

- transition risk is most felt in carbon-intensive sectors, while physical risk is more evenly spread across all sectors.
- companies in the energy sector, which are directly involved in the extraction and production of oil and gas, are most exposed to transition risks.
- utilities, have a broader range of risks and opportunities, whereby some firms face aggregated potential costs and other benefits from the transition.
- within materials the activities associated with mining also reflects a broader range of risks, with the worst impact falling on companies exposed to coal mining.

Appendices

Appendix I: Definitions, metrics descriptions and methodologies

The metrics we disclose in this report follow the FCA's policy statement PS21/24[xvii] and its request to make disclosures consistent with the TCFD recommendations.[xviii] These also reflect climate metric disclosure requirements of the European Union Sustainable Financial Disclosure Regulation (SFDR). Our climate scenario analysis uses the NGFS[xix] climate scenarios.

These disclosures include the approach defined by the Partnership for Carbon Accounting Financials (PCAF) Global GHG Accounting and Reporting Standard for the Financial Industry and the CFRF's industry recommendations.

Table 14: Definitions, metrics descriptions and methodologies

Metric	Asset class applicability	Brief explanation
Overarching methodological definitions		
Greenhouse gas emissions	Equities, corporate bonds, sovereign bonds, property	The seven gases included in the United Nations Framework Convention on Climate Change (UNFCC) as drivers of climate change: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).
CO_2e – Carbon dioxide equivalent	Equities, corporate bonds, sovereign bonds, property	An aggregation of the above seven greenhouse gases into their equivalent as CO_2 based on their radiative forcing (a measure for the strength of climate change drivers) over a given time horizon. Royal London Asset Management relies on company public disclosure and third-party data providers to aggregate all greenhouse gases into a CO_2 equivalent unit. The conversion factors of GHG to CO_2 e are provided by the Intergovernmental Panel on Climate Change (IPCC) Assessment Reports, based on 100-year global warming potentials.
Emissions scopes	Equities, corporate bonds	The GHG Protocol Corporate Accounting and Reporting Standard classified organisation's GHG emissions into three scopes. • Scope 1: direct emissions from owned or controlled sources. • Scope 2: indirect emissions from generation of purchased energy. • Scope 3: all indirect emissions (not included in Scope 2) that occur upstream and downstream the organization value chain. There are 15 sub-categories of Scope 3 emissions. Important sub-categories include category 11, use of sold products which encompasses most energy sector emissions, and category 15, financed emissions explained below.
EVIC	Equities, corporate bonds	Enterprise value including cash (EVIC) according to the FCA Handbook[xx] is the sum, at fiscal year-end, of the market capitalisation of ordinary shares, the market capitalization of preferred shares and the book value of total debt and non-controlling interests, without the deduction of cash or cash equivalents.

xvii Royal London Asset Management – The Net Zero Asset Managers initiative

xviii TCFD-Implementing Guidance

xix The NGFS is a network of 121 Central Banks including the Bank of England.

xx FCA Handbook: Commission Delegated Regulation

Metric	Asset class applicability	Brief explanation
Composite benchmark	Equities, corporate bonds, sovereign bonds	We calculate an equivalent benchmark for the distinct asset classes we disclose against. Our approach this year is consistent with previous years. The equity benchmark is created using a weighted composite of all Royal London Asset Management equity fund benchmarks, including for example FTSE All-Share Index and MSCI ACWI. The individual benchmarks are aggregated using the values of their associated portfolios. The Fixed Income, the composite benchmark adds the ICE BofA Sterling Non-Gilt Index and ICE BofA BB-B Global Non-Financial High Yield Constrained Index, in the same proportion of Royal London Asset Management's fixed income investment grade and high yield assets. The sovereign bonds benchmark is built by weighting the FTSE Actuaries UK Conventional Gilts All Stocks Index in the same proportion as Royal London Asset Management's exposure to UK Gilts and JPM GLOBAL – All Maturities Ex United Kingdom.
Backward looking metrics		
Financed emissions	Equities, corporate bonds	The absolute emissions associated with the investments in the portfolio, expressed in tCO_2e (metric tons of CO_2 equivalent). Emissions are attributed to a portfolio based on the portion of the company's value the portfolio holds, using EVIC for publicly listed corporates. We provide financed emissions for Scope 1 and 2 emissions. For Scope 3 emissions we distinguish between company reported data and estimated data from our data providers. We excluded in this disclosure emissions associated with private issuers of corporate bonds as the market values (EVIC) for publicly listed entities tend to be systematically higher than accounting values (Equity + Debt). With a smaller denominator, private issuers' emissions would look artificially higher. $\text{Financed emissions} = \sum_i \text{attribution fraction}_i \times \text{investee emissions}_i$ $\text{Listed companies attribution fraction}_i = \frac{\text{current value of investment}_i}{\text{enterprise value including cash}_i}$ $\text{Private companies attribution fraction}_i = \frac{\text{current value of investment}_i}{\text{Equity} + \text{Debt}_i}$ (with i = borrower or investee)
Carbon footprint	Equities, corporate bonds	The emissions intensity of an investment portfolio, expressed in tCO_2e/$M invested. Financed emissions (explained above) is divided by the portfolio value. The resulting indicators measures absolute emissions generated for each dollar invested in the fund. $\text{Carbon footprint} = \sum_n^i \frac{\text{financed emissions}_i}{\text{current portfolio value (\$M)}}$ (with i = borrower or investee)

Metric	Asset class applicability	Brief explanation
WACI	Equities, corporate bonds	Weighted Average Carbon Intensity (WACI) indicates a portfolio's exposure to emission-intensive companies, expressed in tCO_2e/$M revenue. GHG emissions are divided by companies' revenues, then multiplied based on portfolio weights (the current value of the investment relative to the current portfolio value). The WACI is calculated as a weighted average sum of the holdings with carbon intensity coverage. $WACI = \sum_n^i \frac{\text{current value of investment}_i}{\text{current portfolio value}} \times \frac{\text{investee emissions}_i}{\text{company \$M revenue}_i}$ (with i = borrower or investee)
Forward looking metrics		
Percentage of companies with ITR below 2°C (or 1.5°C)	Equities, corporate bonds	The percentage of instruments (by value) held in the portfolio through equity stake or bonds that have implied temperature rises (ITR) below 2°C (or 1.5°C). ITR aims to measure the global warming outcome from the emissions trajectory of a company, if the whole economy followed the same trajectory. Each company is allocated a carbon budget based on sector emission reductions pathways that achieve the Paris Agreement goals. The projected cumulative company emissions based on the companies' most recent Scope 1, 2 and 3 emissions and the companies' targets are then assessed against the carbon budget. The percentage over- or undershoot from the allocated budget is then expressed in degrees centigrade (°C), using the Transient Climate Response (TCRE) factor. The TCRE is published by IPCC reports, it results from the linear relationship between cumulative emissions and global temperature increase.
Percentage of companies with near-term SBTi targets	Equities, corporate bonds	The percentage of instruments (by value) held in the portfolio through equity stake or bonds that have validated science-based targets with near-term target trajectories below 2°C. Near-term targets indicate the degree of emission reductions organisations need to take by 2030 in order to align to 1.5°C or 2°C trajectories.

Metric	Asset class applicability	Brief explanation
Percentage of companies aligned, aligning, or not aligned to net zero	Equities, corporate bonds	The percentage of instruments (by value) held in the portfolio through equity stake or bonds that have climate plans defined as aligned, aligning, or not aligned to net zero following Royal London Asset Management's proprietary assessment, which is based on our interpretation of the NZIF. NZIF criteria for alignment assesses: **1** Ambition **2** Targets **3** Emissions performance **4** Disclosure **5** Decarbonisation strategy **6** Capital allocation NZIF definitions of alignment are as following: • Aligned to a net zero pathway = defined as meeting criteria 1-6 (or 2, 3 and 4 for lower impact companies) • Aligning towards a net zero pathway = meeting criteria 2, 4 and partial criteria 5 • Not aligned = all other companies We are disregarding NZIF classification 'achieving net zero' and 'committed to aligning' at present, as they are difficult to assess and add little value to the three-category assessment above. We use a set of 12 indicators wider than the 10 indicators included in the CA100+ benchmark for NZIF to assess climate transition plans. However, Royal London Asset Management's indicators have enough commonalities with NZIF to follow their alignment categorisation.

Metric	Asset class applicability	Brief explanation
Climate Value at Risk (C-VaR)	Equities, corporate bonds	Our Climate Value-at-Risk (C-VaR) is expressed as a percentage of enterprise value at risk. The model aims to provide an assessment on how climate change may affect the investment return in portfolios based on conditions associated with global temperature trajectories (e.g. 1.5°C, 2°C, 3°C). By evaluating policy impact, technology opportunities and physical climate risk, under different scenarios associated with those temperature trajectories, the metric provides insights into the potential stress on market valuation, translating climate-related costs into possible valuation impacts. The underlying climate model we selected is the regionalised model of investment and development (REMIND). It is a global model that couples an economic growth model with a detailed energy system model and a simple climate model. It is hosted at the Potsdam Institut fur Klimafolgenforschung (PIK), Germany. We use four scenarios developed by the Central Banks network NGFS: • **National Determined Contributions** – 'hot house' 3°C scenario • **Below 2°C** – an 'orderly transition' scenario • **Delayed Transition** – a 2°C 'disorderly transition' scenario • **Divergent net zero** – a 1.5°C degrees 'disorderly transition' scenario Orderly or disorderly depends on global cooperation and adequate policies being in place, among other variables. The variables behind each scenario can be reviewed on the MSCI website.

Metric	Asset class applicability	Brief explanation
Additional metrics		
Percentage of companies with fossil fuel exposure	Equities, corporate bonds	The percentage of instruments (by value) held in the portfolio through equity stake or bonds that have any exposure to revenues from the following fossil fuel activities. • Oil and gas any tie, companies with an industry tie (or exposure) to oil and gas, in particular reserve ownership, oil- and gas-related revenues and power generation. • Oil and gas production, companies that provide evidence of revenues from extraction and production of oil and gas. • Artic oil and gas production, companies that provide evidence of producing Arctic oil or gas. • Shale oil and gas, companies that provide evidence of producing oil or gas using the method of hydraulic fracking. • Oil sands, companies with an industry tie to oil sands, in particular reserve ownership and production activities. • Thermal coal, companies disclosing evidence of thermal coal production. • Metallurgical coal, companies disclosing evidence of metallurgical coal production. • Coal power, companies disclosing evidence of thermal coal power generation. • Biomass energy, companies disclosing evidence of biomass power generation. This does not measure the total revenues derived from the portfolio, only the count of issuers with any exposure to the activities defined above.
Percentage of companies with green revenues	Equities, corporate bonds	The percentage of instruments (by value) held in the portfolio through equity stake or bonds that have any exposure to revenues from renewable energy, energy efficiency, green buildings, sustainable water, sustainable agriculture and pollution prevention. This does not measure the total green revenue derived from the portfolio, only the count of issuers with any exposure to green activities. We keep this metric under review.
Financed emissions from sovereign bond investments	Sovereign bonds	The absolute emissions from sovereign debt we are exposed to in our portfolio. We use emissions from sovereign production, also known as territorial emissions, as disclosed by states in the Emissions Database for Global Atmospheric Research (EDGAR). $\text{Sovereign financed emissions} = \sum_{n}^{s} \frac{\text{current value of investment}_s}{\text{PPP–adjusted GDP}_s} \times \text{sovereign emissions}_s$ (with s = sovereign borrower)

Metric	Asset class applicability	Brief explanation
Carbon intensity of sovereign bond investments	Sovereign bonds	The emissions intensity of a sovereign bonds portfolio, expressed in $kgCO_2e$/USD GDP. Emissions from sovereign production (explained above) is divided by the portfolio value. Carbon intensity of sovereign bond investments = $\sum_n^s \frac{\text{current value of investment}_s}{\text{current portfolio value}} \times \frac{\text{sovereign emissions}_s}{\text{PPP–adjusted GDP}_s}$ (with s = sovereign borrower)
Direct property	Property	Directly managed property assets are those which Royal London Asset Management has complete operational control, greater than 50% equity share and joint ventures where they would cover the proportionate amount of emissions. Developments are any new development or major refurbishment that comes online from 2030 onwards.
Indirect property	Property	Indirectly managed property assets are either partially managed by Royal London Asset Management or managed wholly by the occupier.
Energy Performance Certificate (EPC) Rating	Property	Energy Performance Certificates (EPCs) are a rating scheme to summarise the energy efficiency of buildings in the European Union (including the UK post-Brexit). The building is given a rating between A (very efficient) and G (inefficient). Royal London Asset Management's EPCs have been allocated per lease, rather than per asset. This is because areas within assets can be allocated different EPC ratings e.g. retail shopping centres can consist of a mix of buildings with different EPC ratings.
Total Electricity Consumption (kWh)	Property	Electricity consumption per kilowatt hour (kWh) – based on metred building consumption data.
Total Fuel Consumption (kWh)	Property	Fuel consumption per kilowatt hour (kWh). Fuel refers to natural gas consumption only within building types.
Total building energy intensity by floor area (kWh/sqm)	Property	Energy (electricity + fuel) per kilowatt hour per meter squared (kWh / m^2).
Total GHG emissions intensity by floor area (kgC02e/sqm)	Property	GHG (total Scope 1 and 2) per kilogram of carbon dioxide equivalent per meter squared($kgCO_2e/m^2$). Calculated using the Greenhouse Gas Protocol methodology and by applying the UK Government's GHG Conversion Factors for Company Reporting (2019, 2020).
Gross Internal Area (GIA)	Property	GIA is defined as the area of a building measured to the internal face of the perimeter walls at each floor level.

Appendix II: Methodological and data assumptions, limitations and disclaimers

Our disclosed metrics are subject to limitations due to the emerging nature of climate data applications and methodologies in finance. Low levels of data coverage may give inaccurate portfolio statistics. All data is supplied for informational purposes only and should not be relied upon for investment decisions. We endeavour to improve climate data in finance through our engagement with companies and data providers. We believe that technological innovations will make data more easily accessible and auditable in the future. We are also working with regulators, such as through the FCA's Climate Financial Risk Forum (CFRF) in the UK, to support disclosure standardisation.

Although our information providers, including but not limited to, MSCI ESG Research LLC and its affiliates (the ESG parties), obtain information from sources considered reliable, none of the ESG parties warrants or guarantees the originality, accuracy and/or completeness, of any data herein and expressly disclaim all express or implied warranties, including those of merchantability and fitness for a particular purpose.

We have found four areas where limitations are most evident.

1 Issuers' carbon emissions data is incomplete and can be inconsistent across sectors, asset classes and regions.

Most GHG disclosures are voluntary, relative to financial data and are subject to less rigorous auditing. Issuers disclose emissions with different levels of transparency, coverage and methodologies, making disclosures less comparable. For example, they may aggregate all GHGs into CO_2 equivalent values or reveal their operations' carbon intensity and not the absolute emissions. Furthermore, there are instances in which emissions are inherently hard to monitor and measure, such as methane emissions that leak from oil and gas infrastructure. Specific countries, such as the US and China, are relatively further behind in disclosure compared to Europe.

When issuers don't report Scope 1 and 2 emissions, estimation methodologies that allow for further coverage can make emissions data less reliable. Methodologies to estimate emissions can be based on a company's production data, historical companies' emissions reports or by using the subindustry segment intensity average. We have enhanced Scope 1 and 2 emissions with in-house research for fixed income credit instruments based on detailed knowledge of the issuers, capital structure considerations and underlying assets.

Given the lack of issuer data and inconsistencies in reporting we selected to disclose our holdings' Scope 3 emissions as estimated by data providers following the GHG Protocol methodology. The Scope 3 estimation methodologies cannot follow entirely the GHG Protocol as it would require complete understanding of each company's entire value chain and market. Nonetheless, the methodologies are based on bottom-up company-specific data when available but can also use top-down sector intensities. We note that the Scope 3 emission estimates are particularly weak for financials. This is mostly as methodologies for financials are only recently being supplemented by PCAF, disclosures are more complex and estimations involve using reference proxy portfolios and subindustry average emissions which are less accurate in nature than estimations for sectors where activities can be tracked by revenue split or assets.

The comparability and timeliness of companies' disclosures is limited by data providers' research cycles and the rapidly moving landscape of corporate and policy climate pledges. Timing of disclosure varies across jurisdictions and companies, with announcements on climate strategy or emissions targets not necessarily following the financial disclosure schedules. This is compounded by work and research update schedules (the workflow by which they prioritise companies' research) of both our data providers and Royal London Asset Management. The result is that carbon data is often 12-18 months out of date. We endeavour to use the most up to date data available to us at the time of calculation.

2 Issuers' financial data can be inconsistent. The allocation of revenues to specific company green or brown activity has boundaries which can be disputable and uncertain.

The financial data standardised by ESG data providers used in this report may differ to data used in our internal financial analysis. For example, conversion rates and differences in tax system reporting make data less comparable. To assess companies' performance, we use the financial data from various data providers, including the ESG data vendors used in this assessment. This includes revenue, market capitalisation and enterprise value.

Issuers seldom disclose the percentages of revenues for business activities specific to the green and brown taxonomies. Therefore, this is estimated by ESG data providers. For our definition of fossil fuel revenues, we selected the percentage of issuers in our portfolio with any revenue related to the fossil fuel-related activity as the best proxy for our selected metric. While this approach is binary, it limits the data providers' assumptions needed to allocate a specific percentage of revenues to a business segment. It is important to note that this approach can lead us to overestimate our revenue exposures, as it assumes 100% of the business activities are associated with either green or brown revenues and therefore 100% of our position.

It should also be noted that the same holdings may appear in both calculations using this method, for example Shell's fossil fuel activities will count toward the position as a brown revenue and exposure to renewable energy in their portfolio will also be captured as green revenue exposure.

Taxonomies for defining green revenues are being developed, but standardised green revenue data is not yet available. Notably, the EU taxonomy that entered into force in early 2022 will bring standardisation to green product definitions, but disclosures of issuers are still scarce and emergence of different taxonomies globally may cause inter-operability issues. We used MSCI's 'sustainable impact' definition to identify companies with revenue streams from climate and natural capital solutions. This includes activities in renewable energy, energy efficiency, green buildings, sustainable water and agriculture and pollution prevention. We have disclosed the percentage of issuers with any revenue related to these activities.

3 Metrics to assess Paris alignment or the implied temperature response of issuers' emissions trajectories are still evolving.

ITR, SBTi and NZIF alignment are our current selected metrics. They each make assumptions that embed uncertainties in their results.

Data providers' methodologies, using the latest available climate science, will inevitably need to evolve with changes in scientific understanding. This could make our year-on-year disclosures non-comparable. The scientific inputs to the implied temperature rise model used by our data provider are carbon budgets based on IPCC reviewed research. Carbon budgets link economic activity to levels of carbon emissions and these emissions to a level of warming by the end of the century. The relationship between emissions and warming is well-established by science, but other assumptions remain subject to scientific debate. IPCC assertions and models have inherent uncertainties, probabilistic claims and confidence ranges typically used in climate science. For instance, the remaining carbon budget may change with new findings, as well as the upper boundary or worst-case warming scenario. Some modelling assumptions are socio-political such as the rates of population and economic growth and the relative importance of carbon removal strategies to expand the carbon budget through negative emissions (taking GHGs from the atmosphere).

Further uncertainties arise when the global scientific carbon budget concept is applied to company emission intensities and their trajectories over time. For ITR the allocation of a carbon budget to a company is similarly based on the company's emission intensity per dollar of revenue. This means that changes in the company's revenues, for factors unrelated to its emissions reductions such as M&A or sector cyclicality, affect the company's implied temperature scores

A key assumption in alignment metrics is that companies' emission targets are met. Other sources of uncertainty in the methodology include company emissions targets which are typically not standardised. The targets are made comparable by using the number of years the target is applicable to and the percentage reduction of emissions per year. There are currently no factors of credibility included in the forward-looking trajectory of the company emissions. The ITR model assumes the company will meet its targets and does not provide judgement on whether those targets are credible or achievable.

SBTi, provide a source of validation for corporate climate targets, however the initiative does not provide full disclosure of the material provided by companies to obtain verification.

The SBTi allows for different methods for corporates to establish and receive validation of targets, some of which are more likely to avoid a global overshoot of the 1.5 carbon budget. Additional shortcomings include that the SBTi is solely focused on emission reductions and not on full climate transition plans and does not provide a methodology for verification in key sectors where most global emissions are concentrated. Furthermore, the methodologies for target setting represent typically one possible path to net zero and there is lack of acknowledgement of the multiple potential routes to net zero or a broader systemic understanding of the role that different companies within a sector may have to deliver emission reductions.

For our in-house net zero research and engagement we use various frameworks, particularly the NZIF from IIGCC and the CA100+ benchmark. The NZIF required further sector-specificity to provide better alignment disclosures. CA100+ benchmark is solely based on disclosure to the initiative and not data or assessment of corporates actions. Royal London Asset Management's 12 net zero indicators are assessed on a qualitative basis and are therefore subject to analyst judgment. Due to the manual, qualitative nature of the assessment, the analysis is hard to scale in order to provide data to cover Royal London Asset Management's whole portfolio. Our assessment and disclosures are therefore targeted at the highest and most material carbon emitters in our portfolios.

4 Metrics that stress-test the value of financial instruments due to climate change transition (i.e. C-VaR) and physical risk are still evolving.

C-VaR, our selected metric, relies on necessary climate model and socioeconomic assumptions as well as cost and valuation calculations that reduce confidence in the metric.

The metric consists of three models, policy C-VaR, physical C-VaR and technology C-VaR. For each, climate impact is calculated at asset level and translated into impact on cost or return for the next 15 years.

i Policy C-VaR calculations make necessary assumptions on how much a company may need to reduce its GHG emissions due to climate policy and how much this may cost.

Assumptions include countries adequately disclosing their plans to the United Nations Framework Convention on Climate Change (UNFCCC) and implementing them. Carbon prices used to estimate costs are taken from IPCC referenced integrated assessment models (IAM) and scenarios. IPCC and NGFS IAM scenarios assumptions are openly auditable and can be considered the latest science which informs policy. However, these models have assumptions around GDP growth, technology uptake and marginal abatement costs which mean inherently each scenario for which a carbon price is taken will show only one possible alternative future.

ii Physical C-VaR makes assumptions on the climate impact on a company's assets from climate change and how costly this could be in terms of increased business interruptions and/or asset damage.

Climate impact models are used that include chronic hazards such as gradual temperature, precipitation and snowfall changes as well as acute hazards such as coastal flooding and cyclones. The impact of emissions on warming has lower uncertainties than the planet's warming effects on weather and climate and its implications in specific locations. Beyond the difficulty of accurately estimating the increase in vulnerability of assets due to climate change, estimating how much this may cost the business has additional assumptions, for example how costs are aggregated from asset to business balance sheets, assumptions of companies' lack of adaptive capacity and insurance costs.

iii Technology C-VaR has embedded various assumptions on green technology ownership and uptake to estimate how much a company may benefit from transitioning to a low carbon economy.

For this analysis, millions of low carbon patents granted by various patent authorities are assessed. Using current green revenues and patent analysis to understand companies' low carbon innovation, a model simulates which companies may benefit when policies from IPCC and NGFS IAM models that reach different warming goals are implemented globally. Assumptions are made on: technology uptake, the returns these technologies will yield and that patent ownership and citations are a good starting point to understand transition opportunity.

Further assumptions are embedded in the consolidation of each of the sub-model costs and its expression as a final aggregated financial metric. Yearly costs from the three models are added using different assumptions in line with IAM climate modelling, for example that climate policy cost peaks in the next decade and that climate physical risk costs grow steadily. Once all costs are added, a discount rate is applied to bring these to present value. Discount rates are controversial within climate models and economists have argued for different discount rates to be applied to climate cost, given that tail risk has very high impact. The final C-VaR expresses the present-value costs of climate impacts over the current enterprise market value. An additional model splits this C-VaR into equity and debt following reasonable assumptions in line with market practice. There is no consideration as to whether the market has already priced in any of these risks.

Aggregation and coverage

For most of the report, Royal London Asset Management refers to the corporate fixed income and equities portion of Royal London Asset Management's AUM. This portion of the AUM is treated as a distinct Royal London Asset Management portfolio.

The percentage coverage for each metric is based on the portion of this portfolio with available data and expressed in % value in the portfolio. For the portion of Royal London Asset Management portfolio where data (emissions or financial data, including holding value, revenue or EVIC) is not available, the holdings are removed from the aggregation and the remainder of the portfolio is reweighted to 100% in alignment. We follow the aggregation process that our data provider uses. The portion of our portfolio that has no climate disclosures is assumed to mirror the behaviour of the holdings with available data.

Sovereign bonds follow the same aggregation and coverage logic explained above and are treated as a distinct portfolio.

Property is reported separately as the metrics are specific to this asset class.

Royal London Asset Management relies on asset tagging to perform its aggregation calculations. This means there may be, on occasion, incidents where we have excluded instruments with available carbon data as they are not considered to be corporate fixed income or equity instruments. However, we believe the impact this methodological approach has on our entity carbon emissions is immaterial.

Data sources and quality

For our equities and corporate fixed income portfolio the following applies:

Financial data:

Portfolio data and benchmark data is from Royal London Asset Management financial data systems with values as at end of 2022.

Revenues and EVIC data are from MSCI ESG Ratings' latest available information at the time of calculation. EVIC values older than 2019 in MSCI were excluded due to timeliness and relevance which reduced the overall data coverage.

Emissions data:

We disclose percentage of data sourced from Royal London Asset Management's proprietary research or from MSCI. We also disclose percentage of data reported by issuers and percentage of estimated data where either Royal London Asset Management or MSCI have used approximations.

Our equity emissions data comes wholly from MSCI.

For fixed income securities, we have developed our own emissions research process which provides carbon emissions data that is more granular and relevant to our fixed income issuers. The emissions figures are calculated using a formula which uses our sourced data as a preference where this data is available, supplementing with MSCI data or estimates where they have not gathered proprietary data. Royal London Asset Management's data for emissions includes a combination of company disclosures through annual reporting, sustainability supplements, filings to the carbon disclosure project and primary research by our Responsible Investment and Credit teams. Where we lend to ring-fenced subsidiaries, we have tried to source carbon data and revenues specific to those subsidiaries.

All Scope 3 data is sourced from and estimated by MSCI for both fixed income and equities.

Additional metrics

ITR and C-VaR, fossil fuel exposure and green revenues are provided by MSCI. We take SBTi data directly from the public-access website.

Appendix III: Definitions and acronyms

CA100+

Climate Action 100+ is an investor-led initiative to ensure the world's largest corporate GHG emitters take necessary action on climate change. At the time of writing, the group comprised of 615 investors with $65 trillion in assets.

CCUS/CCS

Carbon capture, usage and storage and carbon, capture and storage refer to technologies and methods to remove CO_2 emissions from direct emission points or the atmosphere, to direct it to its inclusion in products or other uses and/or to be stored away.

CFRF

The Climate Financial Risk Forum (CFRF) is an industry body jointly convened by the Bank of England Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA) in early 2019. The forum's aim is to build capacity and share best practice across industry and among financial regulators to advance the sector's responses to the financial risks from climate change. In 2021, the CFRF published guidelines covering risk management, scenario analysis, disclosure and innovation.

Climate physical risk

Physical risks resulting from climate change can be event driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organisations, such as direct damage to assets and indirect impacts from supply chain disruption. Organisations' financial performance may also be affected by changes in water availability, sourcing and quality; food security; and extreme temperature changes affecting organisations' premises, operations, supply chain, transport needs and employee safety. (Source: TCFD)

Climate stress testing

A stress test is a projection of the financial condition of a firm or economy under a specific set of severely adverse conditions. This may be the result of several risk factors over multiple periods of time. Stress testing is a risk management tool used to increase a firm's awareness of its business model vulnerabilities to climate risks. Firms might consider sources of transition and physical risks that will be particularly difficult for them to withstand. (Source: CFRF)

Climate transition risk

Transitioning to a lower-carbon economy may entail extensive policy, legal, technology and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organizations. (Source: TCFD)

Climate transition plan

A Climate Transition Plan (CTP) is an aspect of an entity's overall strategy, setting out targets an actions to contribute to and prepare for a transition towards a low GHG-emissions economy.

Embodied carbon

Carbon emissions associated with materials and construction processes throughout the whole lifecycle of a building or infrastructure. Embodied carbon therefore includes: material extraction (module A1), transport to manufacturer (A2), manufacturing (A3), transport to site (A4), construction (A5), use phase (B1, eg concrete carbonation but excluding operational carbon), maintenance (B2), repair (B3), replacement (B4), refurbishment (B5), deconstruction (C1), transport to end of life facilities (C2), processing (C3), disposal (C4).

GHG Protocol

Greenhouse Gas (GHG) Protocol establishes comprehensive global standardised frameworks to measure and manage GHG emissions from private and public sector operations, value chains and mitigation actions. Building on a 20-year partnership between World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), GHG Protocol works with governments, industry associations, NGOs, businesses and other organizations.

IIGCC

The Institutional Investors Group on Climate Change (IIGCC) is an investor membership body, with a major presence in Europe and the UK, focusing on climate change.

IPCC

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. The IPCC was created to provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options.

Net zero (adapted from the Paris Agreement article 4)

To achieve the long-term temperature goal set out in the Paris Agreement, a global peaking of GHG emissions must occur followed by rapid reductions thereafter. This is to achieve a balance between anthropogenic emissions by sources and removals by sinks of GHGs (net zero emissions).

NZIF

The Net Zero Investment Framework (NZIF) proposes key components of a net zero investment strategy. The Framework puts forward metrics to assess investments and measure alignment and requires investors to set clear, science-based targets at the portfolio and the asset class level. It also sets out implementation actions to effectively achieve portfolio alignment, meet targets and enable a broader transition towards net zero, through a combination of portfolio construction, engagement and policy advocacy. The NZIF is developed by four investor networks partnered under the Paris Aligned Investment Initiative.

NGFS

The Network of Central Banks and Supervisors for Greening the Financial System (NGFS) is a group of central banks and supervisors willing, on a voluntary basis, to share best practices and contribute to the development of environment and climate risk management in the financial sector and to mobilise mainstream finance to support the transition toward a sustainable economy.

Paris Agreement

The United Nations Framework Convention on Climate Change's Paris Agreement was signed in December 2015. Nearly 200 governments agreed to strengthen the global response to the threat of climate change by "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C".

PAII

The Paris Aligned Investment Initiative (PAII) is a collaborative investor-led global forum enabling investors to align their portfolios and activities to the goals of the Paris Agreement.

PCAF

The Partnership for Carbon Accounting Financials (PCAF) is a financial industry-led partnership with the aim of facilitating transparency and accountability through the standardisation of the assessment and disclosures of GHG emissions associated with loans and investments.

SBTi

The Science-Based Targets initiative (SBTi) is a consortium of organisations that set up the definition and promotion of science-based target setting.

TCFD

The Financial Stability Board's Task Force on Climate-Related Financial Disclosures (TCFD) was set up to develop voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers and other stakeholders. In our 2020 report we used the recommendations published by the TCFD in 2017. For this year's report we have followed the TCFD recommendations published in 2021 and some additional guidelines provided by UK regulators including the FCA.

TPT

The Transition Plan Taskforce (TPT) was launched by HM Treasury in April 2022 to develop the gold standard for private sector climate transition plans. The TPT is informing and building on international disclosure standards. The UK Government and the Financial Conduct Authority are actively involved and will draw on the TPT's outputs to strengthen disclosure requirements across the UK economy.

Appendix IV: The TCFD framework

The TCFD disclosure recommendations are structured around four thematic areas: governance, strategy, risk management and metrics and targets. They are interrelated and supported by 11 recommended disclosures that should help stakeholders understand how we consider climate-related risks and opportunities.

The table below indicates where we have reported against each TCFD recommendation within this report.

	TCFD Recommendation	Pages
Governance	Describe the board's oversight of climate-related risks and opportunities	20
	Describe management's role in assessing and managing risks and opportunities	23
Strategy	Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term	26
	Describe the impact of climate-related risks and opportunities on the organisations business, strategy and financial planning	26
	Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2-or-lower scenario	42
Risk Management	Describe the organisation's processes for identifying and assessing climate-related risks	24
	Describe the organisation's processes for managing climate-related risks	23
	Describe how the process for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management	24
Metrics and Targets	Disclose the metrics used by the organisation uses to assess climate-related risks and opportunities in line with its strategy and risk management process	36-38
	Disclose Scope 1, Scope 2 and if appropriate Scope 3 GHG emissions and the related risks	36
	Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	29

Important information

The views expressed are those of the author at the date of publication unless otherwise indicated, which are subject to change, and are not investment advice.

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