

Task Force on Climate-Related Financial Disclosures (TCFD) report

September 2022



Contents

<p>1 Introduction 4</p> <p>1.1 Chair's commentary 4</p> <p>1.2 What is climate change? 5</p> <p>1.3 What are our commitments and our beliefs? 6</p> <p>1.4 What is TCFD? 7</p>	1	<p>4 Risk management 24</p> <p>4.1 How we manage climate change-related risks and opportunities 25</p> <p>4.2 The risk management tools used and the outcomes of using those tools 26</p> <p>4.3 Investment decisions that help address climate change-related risks and opportunities 28</p> <p>4.4 Engagement activities that help address climate change-related risks and opportunities 29</p>
<p>2 Governance 8</p> <p>2.1 Statement of Trustee's Climate Change-related Risks and Opportunities (CCRO) governance policy 9</p> <p>2.1.1 Trustee oversight 10</p> <p>2.1.2 Trustee knowledge and understanding 11</p> <p>2.1.3 Investment manager delegations 12</p> <p>2.2 Management role 13</p> <p>2.3 Advisers 14</p>	2	<p>5 Metrics and targets 30</p> <p>5.1 Our investment strategy and how we report our metrics 31</p> <p>5.2 Our metric calculations 33</p> <p>5.3 The target we have set in relation to the metrics we have calculated, and performance against our target 37</p>
<p>3 Strategy and scenarios 15</p> <p>3.1 The short, medium and long term time periods identified for our pension Scheme 16</p> <p>3.2 The climate change-related risks and opportunities that will affect our Scheme's investment strategy over the short, medium and long term 17</p> <p>3.3 The impact of the risks and opportunities on the Scheme's investment strategy 18</p> <p>3.4 Scenarios 19</p> <p>3.4.1 Details of the scenarios we have selected 19</p> <p>3.4.2 The resilience of our investment strategy in these scenarios (in other words, the results) 20</p> <p>3.4.3 The key assumptions for the scenarios used and any limitations of the modelling 22</p>	3	<p>6 What's next? 38</p>



Introduction

1.1 Chair's commentary

Welcome to our first Task Force on Climate-related Financial Disclosures (TCFD) report, covering the period 1 October 2021 to 31 March 2022.

Climate change is squarely at the top of our agenda

The climate crisis has profound implications for our savers in the NOW: Pensions Trust (the 'Scheme/Trust'). Left unchecked, runaway climate change will lead to substantial financial, environmental and social consequences. This is clearly not in our savers' best interests – which is why climate change is squarely at the top of our agenda.

Sustainable investment makes sense for our savers

We think there are compelling investment reasons to focus on sustainability, and climate change in particular.

The evidence suggests integrating environmental, social and governance ('ESG') issues (including climate change) in investment decisions leads to better risk-adjusted investment returns and helps identify new investment opportunities¹. In other words, investing sustainably is in our savers' best financial interests.

Our commitment

To help us manage climate change-related risks and opportunities, we have committed our investments to net-zero greenhouse gas ('GHG') emissions by 2050 at the latest. This means that the investments we make will not add to the amount of GHG in the atmosphere. We have also set an interim target, committing our investments to 50% emissions reduction by 2030 at the latest, based on 2019 levels.

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

Our investments to manage climate risks

We've taken steps to ensure our investments are resilient to climate change-related risks and opportunities, considering risk, return and real-world impact across our investment strategy.

We've invested in green, social and sustainable bonds since 2017. Our sustainable bonds finance a range of environmental projects, from solar and wind energy production to low-carbon transport and residential buildings.

We've significantly increased our investment in sustainable equity. This doesn't mean we disinvest from energy companies, companies with higher carbon footprints, or companies exposed to social issues. We invest on the basis that we expect their business models to change to be more sustainable.

As investors we, and our investment manager, engage with these companies with the aim of supporting them – and if necessary, requiring them – to transition to a lower-carbon business model. This is called stewardship and is an important part of our strategy.

Sustainability beyond climate change

Climate change is one of a number of sustainability issues important to our investment strategy. Our three priority sustainability issues are climate action, gender equality and living wages. While the purpose of this report is to set out how we consider climate change-related risks and opportunities, where relevant to the reader, the report will reference other sustainability issues (or sustainability more generally). More details are available on our website².

Summary for savers

Alongside the publication of our report, we have prepared a summary for savers. We welcome your comments and questions – and we thank you for reading our report.



Joanne Segars

Chair of Trustees

NOW: Pensions Trustee Limited

¹ The Trustee has reviewed academic and practitioner evidence, including:

- ESG and Corporate Financial Performance: Mapping the global landscape, DWS, 2015
- Financial Performance of ESG Integration in US Investing, PRI, 2018
- Sustainable Reality, Morgan Stanley, 2020
- Global Risks Report, WEF, 2022

² <https://www.nowpensions.com/about-us/our-investment-strategy/responsible-investing/>

1.2 What is climate change?

Climate change refers to global warming caused by the greenhouse gases (GHG) emissions of human activity. This leads to the increased frequency and severity of weather events, such as droughts, sea-level rise, floods, heatwaves, hurricanes and wildfires.

Globally, we emit around 51 billion tons of GHG a year. Most of our emissions come from industry (in particular cement, steel and plastic), energy (including electricity, heating and cooling), agriculture and transport. To stop climate change, we need to stop emitting GHGs.

The GHGs we emit trap energy from the sun in the Earth's atmosphere, warming the planet. We've already warmed the Earth by at least 1.1 degrees³. The GHGs that trap energy in the atmosphere include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and fluorinated gases.



Temperature change is not uniform across the globe. The Earth is warming more rapidly at the north and south poles, by as much as 3 degrees⁴. As the poles warm, the ice melts and becomes water. Ice reflects the sun's rays but water absorbs them, causing further warming.

As the Earth warms, permafrost (ground that remains frozen) begins to thaw. Permafrost stores methane from hundreds of thousands of years of decayed animal and plant matter, and the methane is released as the permafrost thaws. This causes further warming as methane is a particularly potent GHG – much more so than carbon dioxide.

As the Arctic warms further, there is less of a difference between polar air temperature and warmer equatorial air. This weakens the jet stream (which typically acts as a barrier between the cold and warm air) causing further warming at the poles. It also causes extreme weather events⁵.

Carbon capture

To date, attempts to capture and store carbon at scale have been unsuccessful. There are some attempts at technologies that suck carbon out of the atmosphere, but it always takes more energy to do that than it did to put carbon into the atmosphere in the first place. This is because the concentration of atmospheric carbon dioxide is 420 parts per million.



³ <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>

⁴ <https://www.carbonbrief.org/guest-post-why-does-the-arctic-warm-faster-than-the-rest-of-the-planet>

⁵ <https://www.cbc.ca/news/canada/british-columbia/bc-heat-dome-sudden-deaths-revised-2021-1.6232758>

1.3 What are our commitments and our beliefs?

Climate change is now a widely established and socialised concept within financial markets – as a financial risk, due to transition and climate-related transition and physical risks, and as an investment imperative, because the way we direct capital will support (or hinder) climate targets.

This is what we at NOW: Pensions Trustee Limited ('NOW: Pensions') believe.

- A speedy, fair and just transition to a low-carbon economy is the only way to address this crisis. It's likely to constitute the biggest change to the current global economic system in our lifetimes.
- Our investment portfolio should be constructed to achieve net zero GHG emissions by 2050, with 50% emissions reduction by 2030 based on 2019 levels. This is consistent with the Paris Climate Agreement goal of limiting global warming to 1.5°C, compared to pre-industrial levels.

To achieve our commitments, our starting point is to stay invested and have influence, rather than disinvest.

That said, in the same way we judge some investments as too risky however well they perform, we will judge some investments as having too detrimental a real-world impact – especially if there are systemic issues such as climate change or respect for human rights.

This means we will exclude some investments where we think the real-world impact is too detrimental (thermal coal, for example). This reflects our view that systemic issues represent a long-term financial risk to our investment portfolio.

As investors, we have a critical role in using our influence to drive change. We believe in collective action. There is much to be gained from collaborating with other like-minded investors and supporting joint initiatives to tackle climate change.

We influence the companies we invest in through active engagement and dialogue, directly and through our investment manager. We engage companies, governments, stakeholders and third-party asset managers to address climate change-related risks.

Box 1



Our Statement of Investment Principles

Our Statement of Investment Principles (SIP) sets out the principles, beliefs and policies we have adopted as the NOW: Pension Trustee Limited (the 'Trustee') in investing the assets of NOW: Pensions Trust (the 'Scheme').

This is what we say about climate change.

- 3.11** Specifically in relation to the Scheme assets, and subject to 3.5 and 3.8 above, the Trustee has set these goals as part of its RI ('Responsible Investment') objectives.
 - 3.11.1** Net zero carbon emissions by 2050, consistent with the Paris Climate Agreement. Net zero refers to achieving a balance between the amount of greenhouse gas emissions produced and the amount removed from the atmosphere.
 - 3.11.2** At least half of the portfolio's net asset value in investments which support the Trustee's RI beliefs.

Our SIP is available on our website⁶ [here](#).

⁶<https://www.nowpensions.com/resource/statement-of-investment-principles-and-our-implementation-statement/>

1.4 What is TCFD?

The Taskforce for Climate-related Financial Disclosures (TCFD) was established in 2015 by the Financial Stability Board (FSB). It is an industry-led reporting framework setting out recommendations for companies and investors to organise and standardise their climate disclosures.

It was set up because the TCFD considered:

- the financial risks and opportunities posed by climate change are not fully understood or priced by financial markets
- corporate and financial institutions are not prepared for the transition to a low-carbon economy, and
- this will lead to misallocation of assets, the risk of asset stranding, and market volatility – in other words, costs to long-term savers.

The TCFD has since been adopted by regulators, including the UK government.

Box 2

The regulations

The UK government has amended the Pensions Bill⁷ to require large pension schemes and master trusts, such as NOW: Pensions, to publish a TCFD report. We welcome this regulation.

The regulations include the following requirements, split into four themes. We cover all these in this report.

Governance. This includes how we:

- oversee financially-material climate change-related risks and opportunities (CCRO)
- apply processes to stay informed on climate change, and
- disclose our role and the role of third parties with respect to climate change risks and opportunities.

Strategy – the impact of climate change on our investment strategy. As climate change is unpredictable, we use a range of scenarios to measure the financial risk of a certain degree of warming.

- We're required to use at least two scenarios, including a Paris-aligned scenario of 1.5°C.
- We have selected three scenarios: 1.5, 2 and 3°C.

Risk management – how we identify, manage and incorporate climate change-related risks and opportunities in our investment beliefs, policies and decision-making, including:

- risk management tools and the outcomes of using these tools
- how we prioritise risks, and
- how we've used stewardship to manage climate change-related risks and opportunities.

Metrics and target setting. We intend to use the following metrics.

- An absolute emissions-based metric (which we'll explain later in the report).
- An intensity emissions-based metric (also explained later in the report).
- One other emissions-based metric. We've decided to disclose the percentage of assets under management in portfolios where the investment has an explicit sustainability objective.
- An emissions reduction target of net zero GHG emissions by 2050, with 50% emissions reduction by 2030 (based on 2019 levels).

The regulations require NOW: Pensions to:

- implement climate change governance measures and prepare a TCFD report disclosing these, and
- publish the TCFD report, along with a shorter, simpler 'summary for savers' on a publicly-available website.



A summary of this report is available on the [NOW: Pensions website](#).

⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1006024/statutory-guidance-final-revised.pdf



Governance

The organisation's governance around climate change-related risks and opportunities

2.1 Statement of Trustee’s Climate Change-related Risks and Opportunities (CCRO) governance policy

As the Trustee, we are ultimately responsible for identifying, assessing and managing the climate change-related risks and opportunities the Scheme is exposed to.

Through external events, our own training sessions and our own research, we ensure we have the knowledge, skills and understanding to:

- identify climate change-related risks and opportunities
- monitor our service providers, including our investment manager Cardano Risk Management Limited (Cardano), our investment adviser and third-party managers
- interpret climate change-related risks and opportunities, and
- take action where necessary.

In October 2021, we adopted a Climate Change-related Risk and Opportunities (CCRO) governance policy. Our investment committee (IC), a committee responsible to the Trustee, oversees and monitors Cardano’s day-to-day decision-making on climate change-related risks and opportunities.

The IC ensures that Cardano’s day-to-day decision-making reflects the Trustee’s investment beliefs, policies and objectives with respect to climate change-related risks and opportunities. The IC reports the outcome of the assessment to the Trustee.

Our CCRO policy describes:

- how we oversee climate change-related risks and opportunities
- the role of parties other than the Trustee, such as NOW: Pensions staff
- the role of Cardano and third-party managers, and
- the timelines associated with TCFD.

We have set out the main aspects of the policy in the sections that follow.

Box 3



Inputs to our policy

Our policy sets out where responsibility lies and how the framework is implemented on an ongoing basis. It has been prepared in line with:

- the requirements of the Pension Schemes Act 2021
- the Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021 (‘the Regulations’)
- statutory guidance for climate governance and reporting of climate risks issued by the Department for Work and Pensions (DWP)
- the guidance prepared by The Pensions Regulator (TPR)
- the non-statutory guidance prepared by the Pensions Climate Risk Industry Group (PCRIG), and
- recommendations set out in the TCFD.

2.1.1 Trustee oversight

We have established processes to assess, oversee, review and effectively manage CCRO relevant to the Scheme. This includes ensuring anyone who assists the Trustee with governance activities takes steps to identify and assess any relevant CCRO – and where necessary, take investment decisions to address CCRO.

The Trustee retains all strategic investment decisions and assessment, including setting climate-related investment beliefs, policies and objectives. But where appropriate, the Trustee has delegated certain functional responsibilities to its committees, our Investment Adviser, Redington, and our Investment Manager, Cardano.

These are the relevant committees responsible to the Trustee:

Investment committee (IC)

The IC has the following objectives when assessing CCRO.

- To identify, assess and manage the ongoing impact of CCRO on the Scheme's investment strategies over the short, medium and long term. For review and agreement by the Trustee.
- To analyse climate-change scenarios to assess the impact on the Scheme's assets and investment strategy. For review and agreement by the Trustee, including selecting appropriate scenarios.
- To select an absolute emissions metric, an emissions intensity metric and at least one additional climate change metric. Establish clear reporting lines to obtain climate change-related data for the Scheme's investments, and calculate the selected metrics.
- To set at least one target for the Scheme in relation to the metrics, and assess performance against it. For review and agreement by the Trustee.
- To prepare the Scheme's TCFD report consistent with legislative requirements and statutory guidance. For review, agreement and publication by the Trustee.

Audit, risk and compliance committee (ARCC)

The ARCC has the following objectives when assessing CCRO.

- To establish and maintain processes to assess and effectively manage CCRO which are relevant to the Scheme. For review and agreement by the Trustee, including integrating CCRO into the overall risk management of the Scheme.

The IC meets at least quarterly and reports to the Trustee on sustainability topics. Where necessary it includes sustainability and investment staff at NOW: Pensions, Cardano and Redington. The IC commits to assess CCRO on an as-needed basis, and at least annually. In practice, this is currently quarterly. As part of its reporting, Cardano will provide GHG emissions metrics for our investment portfolio, as well as:

- portfolio ESG scores⁸
- ESG scores for the largest investments in our portfolios, and
- details of stewardship and engagement activities for our review.

This allows the Trustee to assess whether the investment processes are consistent with CCRO.

⁸ An ESG score is an assessment of a company's exposure to and management of environment, social and governance factors, including climate change

2.1.2 Trustee knowledge and understanding

We undertake a range of activities to ensure we are sufficiently informed on climate change-related topics to be able to challenge assumptions, external advice and the information we receive.

- Identifying regulatory developments relevant to the Scheme, including guidance from The Pensions Regulator⁹ and Department for Work and Pensions.
- Engaging with peer groups, industry bodies and advisers to compare the Scheme's position to peers or competitors.
- Managing reputational risks by identifying relationships between events and news, and business and financial impacts.
- Identifying and assessing physical and transitional risks over different time horizons.
- Considering the impact of physical and transitional, including operational, risk factors.
- Asking Cardano, Redington and other advisers to provide training on climate change-related topics.

We use our output from the activities listed above to help us consider climate change scenarios, risk management, metrics and targets. We explain these considerations throughout this report.



⁹ <https://www.thepensionsregulator.gov.uk/en/document-library/consultations/climate-change-guidance/guidance>

2.1.3 Investment manager delegations

The Trustee oversees Cardano's investment decision-making as set out in the Investment Management Agreement (IMA) and Statement of Investment Principles (SIP).

At least every year the Trustee reviews the climate change-related metrics, scenarios and targets relevant to the Scheme, taking into account climate-related information (including Scope 1, 2 and – so far as possible – Scope 3 GHG emissions). The Trustee receives independent advice from Redington to do this.

The Trustee expects Cardano to facilitate information flows from third-party managers to obtain climate change-related data for:

- calculating selected metrics and
- assessing the CCRO relevant to the Scheme.

Cardano will flag data gaps and prioritise obtaining data that are likely to make the most significant difference to the Scheme's climate change-related risk and opportunities.

Box 4

Policy engagement to enhance data

Cardano has identified corporate GHG emissions disclosures in the US as important for our Scheme. In April 2022, Cardano responded to the SEC's rule proposal File No. S7-10-22: The Enhancement and Standardization of Climate-Related Disclosures for Investors.

The rule proposal requires issuers of public securities to disclose climate change-related financial information. Cardano supports the rule proposal, which would enhance the quality of climate change disclosures of US companies in our investment portfolio.

2.2 Management role

As the Trustee, we are satisfied Cardano has the skills and resources to integrate our CCRO policy in their investment decision-making.

Cardano has published its sustainable investment beliefs, sustainable investment policy, engagement policy and climate crisis action plan¹⁰, which we have reviewed. The Trustee is satisfied that Cardano's investment and stewardship policies reflect the way we expect our portfolios to be invested.

Cardano is a signatory to the UN Principles for Responsible Investment (PRI), a member of the Institutional Investors Group on Climate Change (IIGCC), and a signatory of the UK Stewardship Code. Cardano's engagement policy sets out how they promote and monitor the shareholder engagement activity of investment and third-party managers included in the portfolios Cardano manages.

As our investment manager, Cardano has publicly stated they will measure their portfolio GHG emissions and set portfolio targets consistent with achieving net-zero GHG emissions by 2050, with a target to halve emissions by 2030 based on 2019 emissions. This is the same target that we have set. The Cardano Group became a net-zero firm (firm operations) in 2021, and has committed to do so every year.

More details on Cardano's approach to sustainability are available on their website, including explanations of Cardano's participation in stakeholder groups¹¹. Cardano has integrated sustainability throughout its business, with activities overseen by the Sustainability Steering Committee, chaired by Kerrin Rosenberg, CEO of Cardano Investment.

Cardano has also employed the services of MSCI, a sustainability data provider, to assist with climate change-related reporting. MSCI provides ESG scores, climate change-related research and GHG emissions data to investors through an online tool which Cardano and Redington have access to (we explain the role of GHG emissions data in more detail later).

MSCI provides ESG and climate change-related reporting necessary to understand, assess and scrutinise climate change-related risks and opportunities relevant to the Scheme. It covers 99% of the companies in our portfolio (see our section on metrics for more details).

¹⁰<https://www.cardano.co.uk/sustainability-policies/>

¹¹<https://www.cardano.co.uk/our-approach-to-sustainability/>

2.3 Advisers

The Trustee is supported by investment, sustainability, compliance and communications staff at NOW: Pensions Limited. The Trustee is satisfied that NOW: Pensions' staff have the skills and experience necessary to support the Trustee's implementation of CCRO policy.

The Trustee is advised by Redington. The Trustee is satisfied that Redington staff have the skills and experience necessary to support the Trustee's implementation of CCRO policy.

We consider the resources spent on understanding and taking action to address CCRO to be commensurate to the seriousness of climate risk to the Scheme.

Diagram 1

This diagram illustrates our governance on climate change-related risks and opportunities.





Strategy and scenarios

The actual and potential impacts of climate change-related risks and opportunities on the organisation's businesses, strategy and financial planning

Introduction

Governance

Strategy and scenarios

Risk Management

Metrics and Targets

What's next?

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

Given the profile of our membership and the length of time their money is invested (to and through retirement) across our single default investment strategy, we consider:

- short term to be 3 to 5 years
- medium term to be 10 to 15 years, and
- long term to be 30 years, out to 2050.

Our assessment of time horizons is consistent with the Scheme journey path which includes savings while working, pre-retirement (as the saver approaches retirement), and retirement.

We use our assessment of time horizons to understand and take action to address the climate change-related risks and opportunities in our portfolios.



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

We consider transition-related risks, including environmental opportunities (such as those involving technology), and physical risks.

We consider these risks systemic – in other words, there will be social and economic impact across our portfolio. This needs to be managed across the short, medium and long term time horizons established above.

Physical risks over the medium term (up to 15 years) are relatively similar, regardless of which scenario we look at. This is because the climate will continue to warm by at least 1.5 degrees over this period in all scenarios. In the longer term, the physical risks will start to diverge substantially in warmer versus cooler scenarios.

We have adapted the table on the right from The Bank of England’s Prudential Regulation Authority. It is a useful summary of the climate-related risks¹² and helps to explain how we think about short, medium and long term.

Climate-related risk		Short/medium/long term	Main causes of financial impact on savers
Physical	Acute	Medium/long	Increased frequency and/or severity of extreme weather events
	Chronic	Medium/long	Steady increase in global sea levels and changes in precipitation patterns
		Medium/long	Rising temperatures
Transitional	Policy and legal	Short/medium	Regulation of existing products and services
		Short/medium	Sectors facing penalty incentives could harm current business models
	Market demand	Short/medium	Changing consumer behaviour
	Technology	Medium	Existing products replaced with lower-emission technology
	Reputational	Short/medium	Increased scrutiny following changes in stakeholder’s perceptions of climate-related action or inaction

¹² <https://www.bankofengland.co.uk/climate-change>

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

We consider climate change-related risks and opportunities in relation to all aspects of the Scheme's investment strategy. For example, climate change could affect:

- the dividend-paying capability and share prices of companies we invest in (either directly or indirectly)
- the prospects and prices of portfolios we invest in via physical and derivative investments
- the creditworthiness of the government bonds we invest in
- the prospects for banks and other financial institutions we place cash with, and
- multiple parts of the portfolio at the same time and in the same direction (systemically), particularly over the medium to long term.

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

- How climate change may affect the different asset classes we are invested in over time.
- How we assess which parts of the portfolio are more susceptible to climate change-related risks and opportunities. This includes:
 - asset class selection and their susceptibility to climate risk
 - allocation within an asset class, for example, to green, social and sustainable bonds or sustainable equity
 - engagement of companies, policy makers and collaboration with stakeholders, and
 - the geographical and sectoral nature of investments (for example, the preparedness of different geographies and sectors to climate change risks).



3.4 Scenarios

3.4.1 Details of the scenarios we have selected

We use scenario analysis due to the complexities involved in forecasting the degree of warming from climate change. Potential complexities include policy uncertainty, multiple environmental tipping points and potential technology advances.

Each scenario consists of a degree of warming and a measure of financial risk (we set this out as a loss to the portfolio). In other words, what do we expect the financial loss to be, based on a certain degree of warming?

We have chosen to disclose three scenarios rather than the mandatory two, because we believe this gives us the best analysis to inform our investment decisions. It highlights the impact of physical and transition risks in different scenarios, enabling us to draw conclusions about the different components of climate change-related risks and opportunities relevant to the Scheme.

Box 5



Our three scenarios

1.5°C

Paris-aligned transition scenario

This is our goal. AIM/CGE¹³ 1.5°C assumes measures are taken that will keep the rise in temperature limited to 1.5°C.

2°C

late transition scenario

This is what we think is most likely to happen. Late AIM/CGE 2 degrees assumes measures are introduced to tackle climate change, but too late to meet the Paris Agreement.

3°C

slow transition scenario

This is our hot-house scenario. AIM/CGE 3 degrees assumes current policies continuing. According to the UN, current policies are on track for 3°C warming.

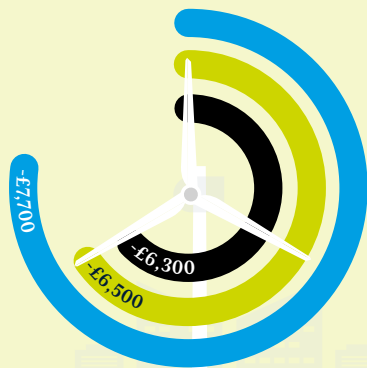
¹³The AIM/CGE model is a multi-regional, multi-sectoral, computable general equilibrium (CGE) model.

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

Our scenario analysis is used to produce a Climate Value at Risk (CVaR). This is the estimated financial loss of warming scenarios at 1.5°C, 2°C and 3°C degrees.

Value at Risk in Scenario

- 1.5 degree CVaR
- 2 degree CVaR
- 3 degree CVaR



Across the three scenarios, the models predict higher transition risks in lower temperature scenarios. This is because in lower temperature scenarios, companies will be forced by government regulation (for example carbon taxes) and other pressures to transition their business models to adapt to a lower carbon world more quickly and there is more risk of stranded assets and greater costs to companies, which are currently not well prepared for that transition.

In the high temperature scenario (3 degrees) the models assume governments do less to regulate company emissions. This will likely lead to even bigger risks in the far future if governments at some point decide to reverse that course, but such risks are not reflected in these models. In contrast the physical risks increase at the highest temperature rises, due to the increased weather events caused by climate change.

It is a major limitation of the methodology that we are unable to model physical risks beyond around 15 years. As such, we believe the physical risks and the potential disorderly transition risks set out above underestimate the financial loss to the portfolio of higher warming scenarios, particularly over the long-term. We will continue to work with our service providers to improve the methodology to model these risks beyond 15 years.

At 2 or 3°C, it is still necessary to reach net zero, just over a longer time period. As such, the transition will still happen, alongside more extreme physical risks. It is for these reasons, that we remain committed to 1.5°C.

We have illustrated the estimated financial loss with £70,000 pension savings at retirement. According to our *Fair Pensions for All* report¹⁴ this is the amount of pension savings a typical woman has at retirement. We have rounded the loss to the nearest percent (or in the case of 3 degrees transition risk, half percent), and nearest £100.

¹⁴ <https://www.nowpensions.com/about-us/fairpensionsforall/>

These results involve a range of assumptions (explained below) and corporate equity only, due to the limitations in methodologies for other asset classes we invest in.

Value at risk in scenario	1.5°C scenario		2°C scenario		3°C scenario	
	%	£70,000 pension	%	£70,000 pension	%	£70,000 pension
Transition risk	-5%	-£3,500	-3%	-£2,100	-0.3%	-£200
Physical risk	-6%	-£4,200	-6%	-£4,200	-9%	-£6,300
Total risk (estimated financial loss)	-11%	-£7,700	-9%	-£6,300	-9%	-£6,500



Interpreting the results

Our Scheme, similar to many pension schemes, uses physical investments (such as listed equities, also known as stocks and shares) and derivative investments (such as futures).

To understand our expected loss we look at the aggregate exposure across corporate physical equity and derivative equity. The financial loss for each scenario is the weighted aggregation of each company's expected loss within our portfolio.

When calculating CVaR we have not included the following asset classes:

1. sovereign bonds (bonds issued by governments)
2. derivatives on sovereign bonds, also known as total return swaps ('TRS')
3. green, social and sustainable bonds
4. commodities, such as our allocation to base metals
5. cash

This is due to limitations in methodologies. For example, financial outcomes for sovereign bonds are highly dependent on assumptions around monetary policy, inflation, growth and government policy. We will continue to review data availability and methodologies and expect to be in a position to include these asset classes in future TCFD reports.

In the next section, we explain the limitations of the modelling.



3.4.3 The key assumptions for the scenarios used and any limitations of the modelling

In completing the analysis we have relied on Cardano and the methodology MSCI has developed to calculate CVaR and estimated financial loss. Broadly speaking, this considers risk in two parts.

Transition risk

This is calculated by considering a company's exposure to GHG emissions and an assumed carbon price. To the degree that the carbon price is not currently embedded in the company's cost base, this increases the cost to the company causing a loss of profitability. The carbon price assumptions are linked to whichever climate change scenario is selected. In a 1.5 degree scenario, carbon prices are assumed to increase faster than in the 3 degree scenario, creating more transition risk for businesses. In other words, transition costs (for example, switching energy sources, retrofitting buildings, rolling out electric vehicles) are assumed to be higher in a faster transition.

Transition risk includes solutions. This looks at green revenues and patents and assumes that, where companies have these, they will be growing portions of a company's revenues in the future, potentially offsetting some of the negative impacts of transition and physical risk. These will be more valuable in faster transition scenarios. Solutions are included in transition risks.

Physical risk

This looks at potential losses from physical risks such as floods, drought, wild fires and rising sea levels, particularly over the next 15 years. It is based on modelling the company risk exposures. Due to limitations in modelling, this does not allow for the economic impact higher temperatures might have, for example, slowing economic growth.

There are two physical risk calculations: 'average' physical risk and 'aggressive' physical risk. The average physical risk is £4,200 and the aggressive physical risk is £6,300.

Any scenario analysis depends heavily on the underlying assumptions. Following discussions with Cardano, we believe the key assumptions underlying the modelling are reasonable and will review them annually to ensure we remain comfortable with them. However, there are still a number of fundamental uncertainties around the following¹⁵.

Future GHG emissions:

- expected warming for a given amount of GHG emissions
- emission trajectory
- estimates of the strength of different feedbacks ('tipping points') in the climate system
- changes in polar ice sheet mass, and
- regional projections of climate change.

How government policies will drive transition risks including:

- legislation and regulation
- monetary policy
- fiscal policy.



Market reactions to changes in policy, growth and inflation.

The economic impacts on future growth and inflation of:

- climate change, and
- the government's response to climate change.

For our portfolios, our largest **transition risks** are in the following sectors: energy, transport, automobiles and components, materials, and food and beverage production. Our largest physical risks are in the following sectors: food and staples retail, insurance, food and beverage production, health care equipment and services, and real estate.

We believe the physical risks set out above underestimate the financial loss of higher warming scenarios. This is due to the limitations in methodologies - in particular that we are unable to model physical risks beyond 15 years.

The scenarios are intended to be a starting point to inform investment decisions, which we set out in the risk management section that follows.

¹⁵ https://www.cifor.org/publications/pdf_files/WPapers/WP45Santoso.pdf



4

Risk Management

The processes used by the organisation to identify, assess and manage climate-change related risks and opportunities

Introduction

Governance

Strategy and scenarios

Risk Management

Metrics and Targets

What's next?

4.1 How we manage climate change-related risks and opportunities

We have identified the following risks as posing the greatest potential loss, and the most likely to occur.

Risk 1

Correctly identifying portfolio risks from climate change. New physical and transition risks are likely to emerge.



Risk 2

Insufficient action to avoid the 3 degree scenario, with risk of environmental tipping points



Risk 3

Not developing the investment strategy adequately for savers as we move through time



We have added climate change to our risk register. We've made changes to our portfolio to address the risks we have identified, as we explain in the next section.

4.2 The risk management tools used and the outcomes of using those tools

Level 1:

Selecting MSCI as an external sustainability data provider

In 2020, following a 'Request for Proposal' process which reviewed the service offerings of different providers, Cardano appointed MSCI as its external sustainability data provider. In particular, Cardano selected MSCI for the extent of its coverage, its research process and data reliability, and portfolio scenario analysis based on degrees of warming, following the acquisition of carbon delta in 2019¹⁶.

The Cardano Group's Sustainability Steering Committee oversees the appointment (and reappointment) and reports to us each year.



Level 2:

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

A range of methodologies is available for calculating the GHG emissions of companies and portfolios.

Cardano takes part in multiple industry initiatives to develop metrics and reporting on climate change, and reports to us regularly. In particular, Cardano has adopted the approach to metrics set out by the IIGCC's Paris-aligned Investment Initiative¹⁷. We have assessed Cardano's chosen methodologies and are satisfied with them. We believe the approach is market leading and equips us to assess the climate change-related risks and opportunities relevant to the pension Scheme.

The Paris-aligned Investment Initiative sets out the advantages and disadvantages of the multiple methodologies used to determine company's and portfolio's:

- absolute emissions
- emissions intensity, and
- more recently, environmental alignment.

When considering a company's GHG emissions we use 'EVIC' (enterprise value including cash). This is also known as 'financed emissions' and is used to determine a company's and portfolio's GHG emissions - in other words, the emissions the investor is financing. EVIC includes a company's market cap (or equity) and a company's issued debt. This aligns with MSCI.

¹⁶ <https://ir.msci.com/news-releases/news-release-details/msci-strengthen-climate-risk-capability-acquisition-carbon-delta>

¹⁷ Cardano joined IIGCC in Q4 2020.



Level 3:

Internal controls

Cardano has implemented internal controls for preparing TCFD metrics and scenarios, which we have reviewed to ensure they are appropriate. NOW: Pensions staff have undertaken an internal audit of our report and we've also sought external legal advice.

Finally, we note that there are gaps and assumptions in the data. In some markets, GHG emissions disclosures are not regulated or subject to audit.

The quality of the data is constantly improving. We believe the processes we have implemented are market leading and mitigate, as far as possible, known limitations in data quality and coverage. We continue to engage with standard-setters, policymakers, data providers and companies to improve data quality.

4.3 Investment decisions that help address climate change-related risks and opportunities

We have made a number of investment decisions that relate to our assessment of climate change-related risks and opportunities. These decisions are ongoing, enhanced by the scenarios and metrics set out in this report.

Green, social and sustainable bonds

We have invested in green bonds since 2017. We increased our investments in green, social and sustainable bonds during 2020 and 2021. For example, in September 2021 Cardano invested in green bonds issued by the UK government on our behalf.

The financial characteristics of sustainable bonds are the same as conventional bonds. They have a fixed term, fixed notional and a fixed coupon. The main difference is that the proceeds of sustainable bonds are used for green, social or sustainable purposes. Our bonds finance a range of environmental projects, from solar and wind energy production to low-carbon transport and residential buildings.

We would expect green, social and sustainable bonds to reduce the estimated financial loss – but, they are not currently included in our scenarios due to lack of methodology.

No direct commodity exposure to fossil fuels

In 2020, we ended our direct commodity exposure to fossil fuels. A commodity investment does not allow us to exert influence through stewardship. Fossil fuels tend to perform well in periods of high inflation. To manage our inflation exposure, we have invested in base metals and inflation swaps instead. Base metals, such as copper and aluminium, will be needed as we electrify our energy systems, so we expect base metals to help us manage inflation-related risks as well as perform well as part of the transition.

Environmentally aware cash fund

All pension schemes need liquidity (easy access to cash) to make payments to savers as they reach retirement. Our portfolio invests in an environmentally aware cash fund that provides liquidity while considering environmental criteria.

ESG-screened low carbon equity with stewardship

In 2021, we invested in a portfolio of ESG-screened low carbon companies with stewardship. This means we invest in companies with, on average, 50% lower GHG emissions and better scores than the benchmark. The portfolio also has no (or very limited) exposure to activities that contravene international standards, such as controversial and nuclear weapons, thermal coal and oil sands.

Investment with an explicit sustainability objective

In Q1 2021, as part of our investment strategy review, we set ourselves a target. We wanted at least 50% of investments in the portfolio to have an explicit sustainability objective by the end of 2021. We have exceeded this target. We are at 56%, and allocations will be increased in the next Scheme year. This is our third metric, which we discuss further in the next section.



4.4 Engagement activities that help address climate change-related risks and opportunities

We will resist pressure to modify portfolios to meet headline portfolio-level decarbonisation targets at the expense of incentivising the real-world transition that is needed. Our goal is net-zero GHG emissions globally – and we seek to maximise our influence to achieve this.

We believe it is important to engage with companies and governments, and (where consistent with our return) risk and sustainability objectives, to supply capital enabling transition to net-zero GHG emissions globally.

For example, emerging markets tend to have higher carbon footprints, in part because they produce carbon-intensive goods consumed by developed markets. They need capital to transform their economies.

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

Third-party asset manager engagement

Where Cardano invests directly, we expect them to engage on our portfolio holdings. Cardano is a signatory to the UK Stewardship Code and a member of stakeholder initiatives that facilitate engagement, such as Climate Action 100+. Where Cardano invests via a third-party manager, we expect Cardano to assess the sustainability characteristics of the fund manager and the portfolio. We will also assess it to ensure it is consistent with our investment strategy and CCRO policy.

Corporate engagement

Starting in Q1, 2022, Cardano has applied enhanced stewardship to its direct and indirect investments. Our Head of Investment Emma Matthews, Head of Sustainability Will Martindale, and Cardano staff engage with companies we hold in our portfolios.

Cardano works with Sustainalytics to support its engagement work. This includes thematic engagements on topics such as climate change on companies in our portfolios.

We have prioritised three sustainability issues:

- climate action
- gender equality
- living wages

Policy engagement

We also engage policymakers on sustainability topics. We participate and respond to government consultations on sustainability issues.

We believe we have a responsibility to use our influence to improve the quantity and quality of corporate GHG disclosures. We – and Cardano – take part in public policy consultations, engaging policy makers to improve corporate disclosure obligations.

For example, we responded to the Department for Work and Pensions' (DWP) consultation on climate and investment reporting, published in October 2021.

Our chair, Joanne Segars, and our Head of Sustainability, Will Martindale, take part in the DWP's Occupational Pensions Stewardship Council.



Metrics and Targets

The metrics and targets used to assess and manage relevant climate-change related risks and opportunities

5.1 Our investment strategy and how we report our metrics

Our investment strategy uses derivatives alongside traditionally-funded investments. This enables participation in market performance beyond what would be possible using only 100% funded investments.

Leverage allows us to amplify the risk management characteristics of our portfolio, while still investing in growth-seeking investments. It allows us to achieve investment performance on behalf of our savers in periods of weak market performance, while still accessing the upside in periods of strong market performance.

In the tables that follow, the total of our investments is higher than 100% because we use leverage to access market exposures beyond what we could achieve with only physical investments. To do this we use derivatives – mostly equity futures, total return swaps and inflation swaps.

There is no established methodology for considering the GHG emissions of derivatives. Some argue derivatives have zero emissions because they are not physically invested in companies.

We disagree. As this TCFD report sets out how we measure and manage climate change-related risks and opportunities, we've decided to consider the GHG emissions of derivatives in the same way as physical investments.

Derivatives take their prices from their physical equivalents, so the financial risks of climate change on derivatives' financial performance will be similar to those of physical investments.

When measuring GHG emissions across our portfolio we aggregate the emissions of companies, disclosing Scope 1 and 2 emissions, as well as Scope 3 (see Box 6: 'Scopes of emissions'). We recognise there are gaps in data availability, in particular for Scope 3 emissions.

But we also believe Scope 3 emissions help us better understand a company's sensitivity to climate change-related risks and opportunities and its ability to transition. This, in turn, helps us to understand the relative performance of different companies within industries.

Box 6



Scope of emissions

The GHG Protocol Corporate Standard¹⁸ classifies a company's GHG emissions into three 'scopes'.

Scope 1:

Direct emissions from owned or controlled sources.

Scope 2:

Indirect emissions from generating purchased energy.

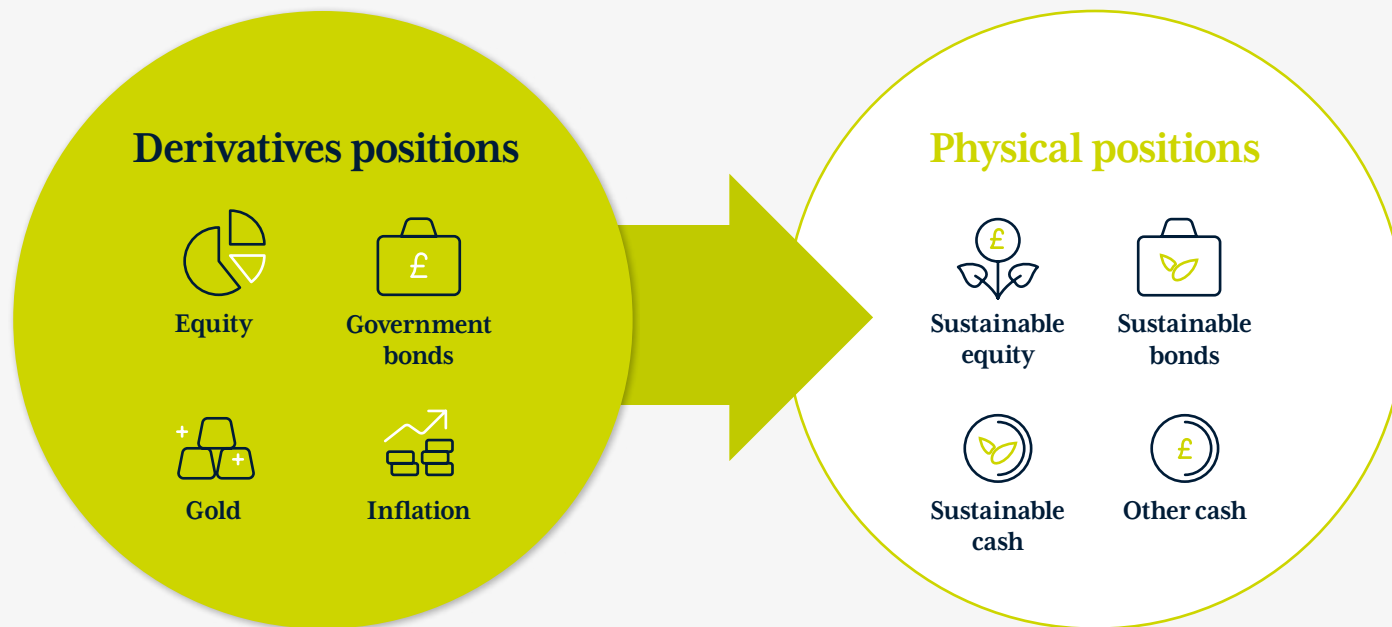
Scope 3:

All indirect emissions not included in Scope 2 in the value chain of the reporting company, including upstream and downstream emissions.

¹⁸ https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf

Diagram 2

How we achieve leverage with our investment strategy and use of derivatives.



Our TCFD report includes metrics associated with the following investments.

- **Physical:** sustainable equity, sustainable bonds, government bonds.
- **Derivatives:** equity, government bonds.

In the tables that follow we explain which investments contribute to which metrics.

5.2 Our metric calculations

We calculate and disclose the following metrics.



164,700
tCO₂e

Total or absolute GHG emissions.
Our absolute emissions for GHG Scope 1 and 2 are 164,700 tCO₂e for physical sustainable equity and derivatives equity (we explain why this applies to physical and derivatives on the next page). This is the total GHG emissions, in tons of CO₂ equivalent, of Scope 1 and 2 emissions.



71.3 tCO₂e
per £1m invested

Carbon footprint or emissions intensity.
Our emissions intensity for GHG Scope 1 and 2 is 71.3 tCO₂e per £1m invested in physical sustainable equity and derivatives equity (we explain why this applies to physical and derivatives equity on the next page). This is the emissions intensity metric and is represented by the total GHG emissions in CO₂ equivalent per million pounds invested, of Scope 1 and 2 emissions.



56%

Investments with an explicit sustainability objective. This is 56%.
This is the percentage of assets under management in our portfolios, where the investment has an explicit sustainability objective. It includes green, social and sustainable bonds, low carbon ESG-screened equity, and environmentally-aware cash investments.

For our first two metrics, we also disclose estimated Scope 3 emissions. These are not regulatory disclosures because we're not yet satisfied the data is reliable. But we do see benefits in pension schemes such as ours being transparent in our disclosures to support more development of data quality and coverage. We also disclose data availability across our portfolios.

All data is from 31 March 2022 unless otherwise stated.

Table 2: Investments with an explicit sustainability objectives*

This table shows our physical investments, highlighting those with an explicit sustainability objective. As with our scenarios, these are based on pension savings of £70,000 at retirement. These figures have been rounded.

Investments	% of £70,000 pension	Amount in money	Incorporated in our metrics	Explicit sustainability objective
Sustainable equity	19%	£13,414	Yes	Yes
Sustainable bonds	13%	£9,018	Yes	Yes
Sustainable cash	24%	£17,027	No robust methodology	Yes
Government bonds	27%	£19,141	Yes	No
Cash	16%	£11,400	No robust methodology	No

We also use cash and governments bonds as collateral for our derivative positions. The GHG emissions associated with our derivative equity and government bond investments are included in the following tables. We have not included the GHG emissions associated with our derivative inflation and gold investments, as there are currently no robust methodologies.

Table 3: Green, social and sustainable bonds

This table gives more details of our green, social and sustainable bonds.

Sustainable bond exposures consist of exposures to bonds used to specifically finance green, social or other sustainable objectives. They must meet quality standards for use of proceeds and the certification and monitoring of the use of proceeds. We don't add the carbon footprint of these bonds to other parts of the portfolio, or subtract the emissions avoided from other parts of the portfolio.

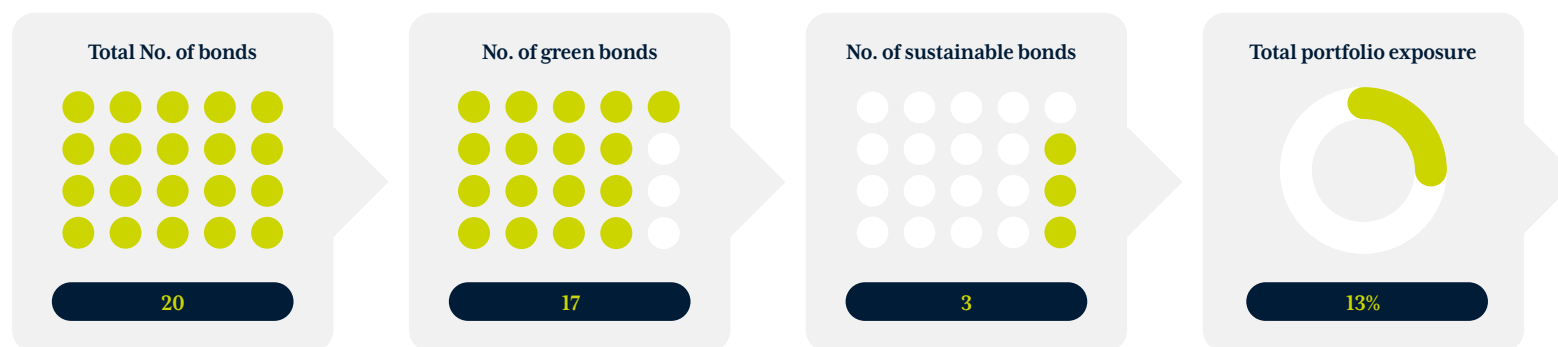


Table 4: Government bonds, GHG emissions per person

This table shows the weighted GHG emissions per person for each government bond we invest in. The net exposure includes physical and derivative government bonds. Derivatives can be a long or short position.

There are typically three ways to measure the GHG emissions of a country.

- **Per 'issued debt'**: the percentage we own of a country's debt multiplied by its emissions. This favours countries with large debts.
- **Per GDP**: a weighted average of the GHG emissions per unit of GDP. This favours countries with large GDPs.
- **Per person**: a weighted average of the GHG emissions per person. We consider this the fairest way to measure sovereign GHG emissions because a ton of GHG emissions has the same contribution to climate change, regardless of where it is emitted, or by whom.

It doesn't make sense to combine the GHG emissions of government bonds and corporate equity, so we report these separately.

Country	Average GHG in tons of carbon dioxide equivalent per person	Physical government bonds	Net exposure (physical + derivative government bonds)
Australia	22	0%	17%
Canada	19	0%	22%
Germany	9	11%	1%
UK	6	8%	16%
US	17	8%	17%
Portfolio weighted average		11 tons of GHG emissions per person	16 tons GHG emissions per person

Table 5: Emissions associated with our equity exposure

This includes the emissions of physical sustainable equity and derivative equity. These figures have been rounded.

Asset class	% finance of portfolio exposure	% coverage of GHG emissions data for Scope 1 + 2	Absolute emissions			Carbon footprint: Emissions intensity		
			Ton of GHG emissions / EVIC			Ton of GHG emissions / EVIC per million pounds invested		
			Scope 1+2	Scope 3 up-stream	Scope 3 down-stream	Scope 1+2	Scope 3 up-stream	Scope 3 down-stream
Physical sustainable equity	19%	99%	21,100	64,700	122,800	32.3	98.7	187.5
Derivative equity	48%	100%	143,600	195,100	654,000	86.8	118.0	395.4
Total	68%	99%	164,700	259,900	776,800	71.3	112.5	336.4

The data for derivative equity is from 31/03/2022 using MSCI proxy holdings as at 31/12/2021.

Our absolute GHG emissions for Scope 1 and 2 are 164,700 tons of carbon dioxide equivalent for physical and derivative equity. On average, this is equivalent to the GHG emissions of 27,600 UK residents or 280,000 flights from London to New York, or 2 million car journeys from London to Edinburgh.

Our emissions intensity metric for Scope 1 and 2 is 71.3 tons of carbon dioxide equivalent for physical and derivative equity, per million pounds invested in equity. The intensity per million pounds invested of the total portfolio assets is 48.4 tons of carbon dioxide equivalent, because the portfolio is 68% invested in physical and derivative equities ($71.3 \times 68\% = 48.4$).



5.3 The target we have set in relation to the metrics we have calculated, and performance against our target

Having set out our metrics, we turn to the target we have set and how we use our metrics to determine progress towards it.

We have set the following principal target for the Scheme.

- We have committed our investments to net-zero GHG emissions by 2050 at the latest. This means that the investments we make will not add to the amount of GHG in the atmosphere.
- We have also set a mid-term target, committing our investments to 50% emissions reduction by 2030 at the latest, based on 2019 levels²⁰.

We review the progress against our target every year and review the target itself at least every three years. This is to ensure it remains consistent with the latest scientific thinking and is appropriately incentivising the economic transition that is needed.

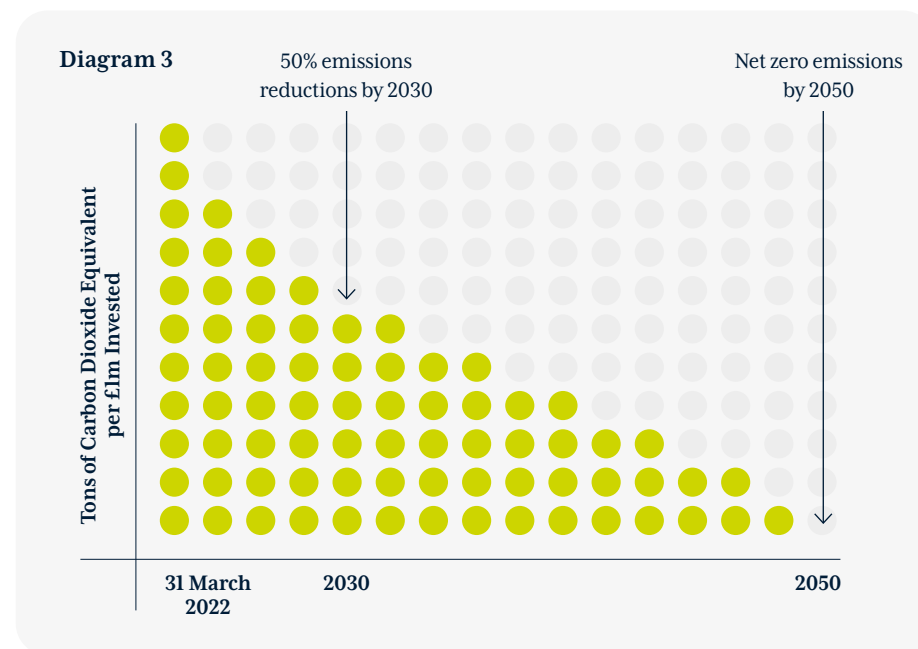
To assess our Scheme's performance against our target, we consider the following.

- The emissions intensity of our physical equity and derivative equity investments. We measure our target using the market portfolio that best represents the portfolio's strategic asset allocation.
- We will also consider the GHG emissions per person of the government bonds we invest in. For example, the UK government has legislated for net zero GHG emissions by 2050.

For this TCFD report, we consider Scope 1 and 2 GHG emissions. To meet our target, absolute emissions and emissions intensity will need to be zero by 2050, as illustrated in Diagram 3.

The investment decisions we have made, including our allocations to sustainable bonds and ESG-screened, low carbon equity, are progress towards our target.

²⁰ <https://www.ipcc.ch/reports/>



We will continue to review progress towards our target, which will inform our investment strategy.

Our objective is to achieve decarbonisation through the transformation of underlying businesses and government activities rather than divestment. This is because it is in our savers' interests to decarbonise the economy as a whole. By remaining invested we retain our influence on the companies that must transition.

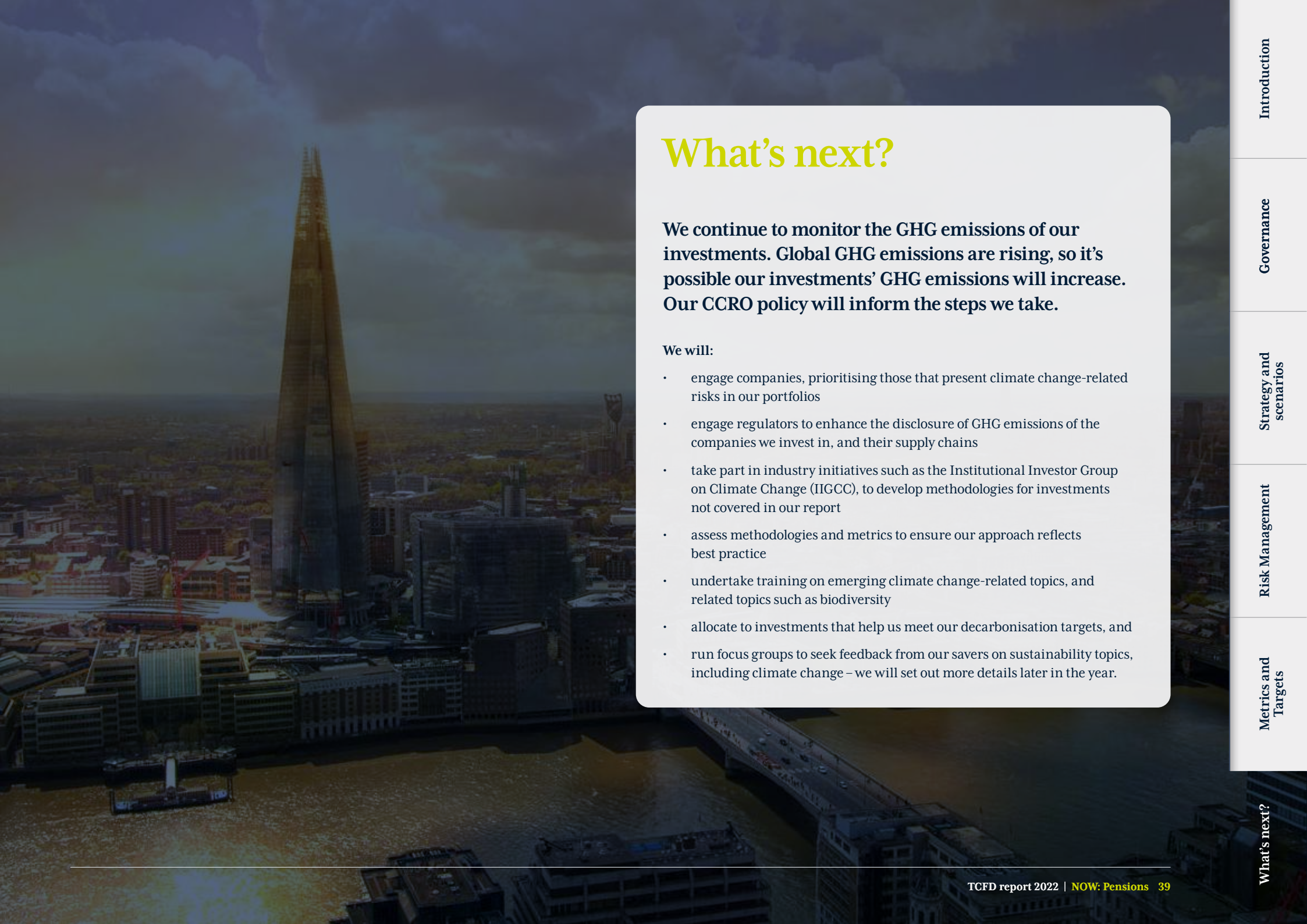
Cardano will update the metrics presented here for the IC to review, so we can track progress against our target of net zero GHG emissions by 2050.



WE NEED
A CHANGE

6

What's next?



What's next?

We continue to monitor the GHG emissions of our investments. Global GHG emissions are rising, so it's possible our investments' GHG emissions will increase. Our CCRO policy will inform the steps we take.

We will:

- engage companies, prioritising those that present climate change-related risks in our portfolios
- engage regulators to enhance the disclosure of GHG emissions of the companies we invest in, and their supply chains
- take part in industry initiatives such as the Institutional Investor Group on Climate Change (IIGCC), to develop methodologies for investments not covered in our report
- assess methodologies and metrics to ensure our approach reflects best practice
- undertake training on emerging climate change-related topics, and related topics such as biodiversity
- allocate to investments that help us meet our decarbonisation targets, and
- run focus groups to seek feedback from our savers on sustainability topics, including climate change – we will set out more details later in the year.

