Cronfa Bensiynau
CLWYD
Pension Fund

Clwyd Pension Fund

Climate change governance and reporting in line with the recommendations of the

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

Clwyd Pension Fund

Reporting period: 12 months to 31 March 2022

Contents

Section 1
Introduction

Welcome to our first climate change report, which has been prepared in line with the recommendations of the Task Force on Climate-Related Financial Disclosures ("TCFD").

The Committee of the Clwyd Pension Fund ("the Fund") recognises climate change as a risk that could impact the Fund's ability to achieve its required long term investment returns if it is not properly measured and managed.

An assessment of climate-related risks and opportunities has been carried out based on information that is currently available, both in terms of data from the companies and assets in which the Fund invests and in consideration of the different global warming scenarios. This data is subject to change as climate change reporting improves.

Climate change is one risk amongst many that the Fund measure, monitor and manage. To this extent, climate change needs to be considered alongside these other risks in a balanced and proportionate way. The Fund also recognises that climate change presents an opportunity, by investing in companies or assets that are expected to perform well in an economy that is positioned to address climate change. However the Fund will continue to invest in companies where there is a sufficiently attractive investment case and the asset manager believes there is an opportunity to engage and influence change in the behaviour and actions of a company.

This report has been split into several sections to help readers understand:

- **Governance:** How the Fund incorporates climate change into its decision making;
- **Strategy:** How potential future climate warming scenarios could impact the Fund; and
- **Risk Management:** How the Fund incorporates climate-related risk in its risk management processes;
- **Metrics and Targets:** How the Fund measures and monitors progress against different climate-related indicators known as metrics.

The final section sets out the methodology and assumptions used to produce the information contained in this report.

As always, members are encouraged to contact the Fund if there are comments you wish to raise. You can contact the officers below:

- **Philip Latham** (Head) – philip.latham@flintshire.gov.uk
- **Debbie Fielder** (Deputy Head) – debbie.a.fielder@flintshire.gov.uk
- **Ieuan Hughes** (Investment Officer of the Clwyd Pension Fund) – Ieuan.Hughes@flintshire.gov.uk

Cllr. Ted Palmer
Chair Clwyd Pension Fund Committee

Section 2

Executive Summary

The Committee recognises that the risks and opportunities associated could impact the long term financial viability of the Fund, there is also a recognition that this is a complex and multi-faceted issue.

It is therefore vitally important that the Committee understands the position of the Fund, in terms of its current, ongoing, carbon impact. In order to understand this the Fund monitors three main, backward looking ongoing carbon metrics: (1) absolute emission, (2) carbon footprint, (3) weighted average carbon intensity ("WACI").

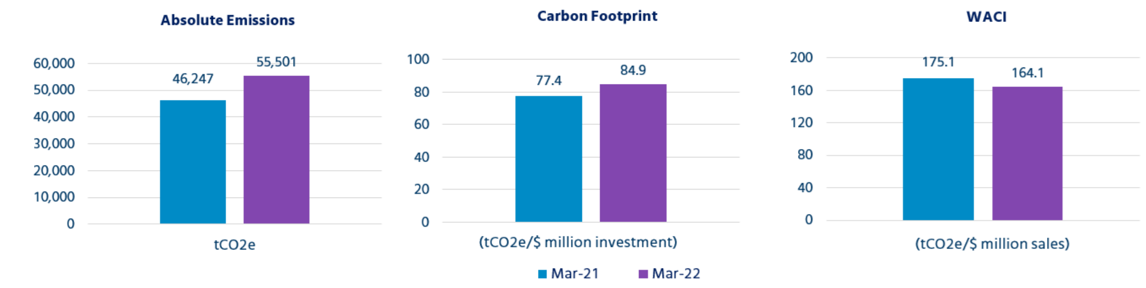
Absolute Emissions, this is the total equivalent amount of CO_2 that the Fund's invested asset release into the atmosphere every year. Absolute emissions are significantly influenced by the level of assets invested, the more assets the higher the absolute emissions.

In order to allow a fairer comparison the Committee monitor two carbon intensity metrics, Carbon Footprint and Weighted Average Carbon Intensity. Carbon Footprint takes the total absolute carbon emissions of the portfolio and divides it by the current value of the portfolio. This allows comparison between Funds of different sizes, as well as a fair comparison through time as the Fund's own assets will fluctuate year on year. Weighted Average Carbon Intensity takes each underlying companies absolute carbon emissions and divides it by the company's revenue. This provides the Committee with an indication of whether the underlying companies are decarbonising over time and shows how sensitive the underlying investments are to climate transition risk.

The Committee conducted base line analysis on the Fund's investments as at 31 March 2021, and ultimately agreed a range of targets, full details on all of the Fund's targets can be found in Section 7 of the Report, with the key targets being:

- **to target a net zero investment portfolio (covering all assets) by 2045 or earlier.**
- **shorter-term target of a 50% or more reduction in carbon emissions by the end of 2030.**
- **targets relating to its Listed Equity holdings, seeking a reduction in carbon emissions of 36% by 2025 and 68% by 2030, whilst also targeting a reduction in fossil fuels.**

The ultimate target of being net zero across all the portfolio is still some way off, in part this is also due to the availability of data. Outside of listed equities, the carbon data quality is less robust. The Fund accepts it will take time to improve carbon data quality to be of sufficient quality to review all assets and so the focus of this report is on the listed equity portfolio (target three above).



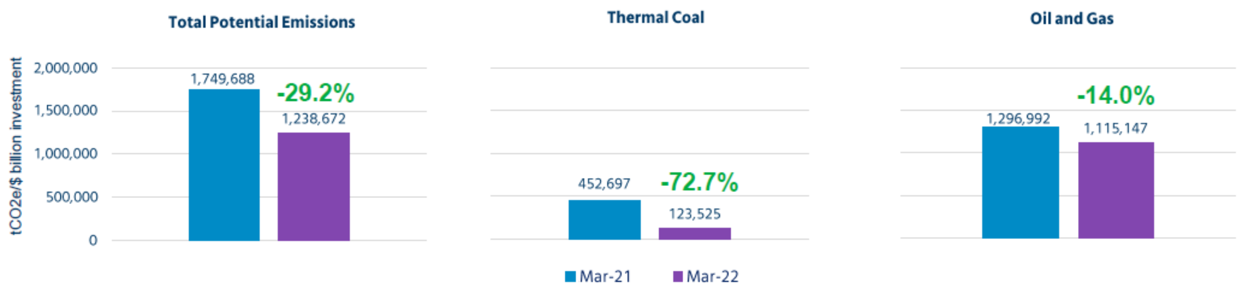
The chart above shows the changes in the three carbon metrics detailed earlier as at 31 March 2021 (the baseline date) and 31 March 2022 for the listed equity portfolio only.

The **absolute emissions of the Fund's listed equity portfolio has increased by 20.0%** over the one year period from 31 March 2021 to 31 March 2022.

The **carbon footprint increased by 9.7%** over the same time period, whilst the **Weighted Average Carbon Intensity (WACI) decreased over the same period by 6.3%.**

The increase in absolute emissions and carbon footprint, whilst unwelcomed, is understood. Absolute emissions have increased, in part this is due to the assets analysed being c.14% higher than in 2021. The increase in assets is the predominant driver, however the increase in carbon footprint highlights that the increase in absolute emissions is also due to an increase in the carbon intensity of the underlying investments. The primary driver of this increase was the change in the Emerging Market (EM) equity investments. These assets were moved into the WPP EM fund, which, in comparison to the previous EM investments has a higher carbon footprint. The Fund is committed to pooling and continues to engage with WPP and the underlying asset managers to ensure that all funds have decarbonisation targets.

On a more positive note the fall in WACI indicates that at the most granular level, the companies that the Fund ultimately invests in are less carbon intensive now than they were a year ago. As a result, collectively these companies are less susceptible to transition risk than they were 12 months ago.



Fossil fuel reduction is also a key target of the Fund (specific targets shown in section 7). Over the 12 month period to 31 March 2022, within listed equity portfolio, **Total Potential Emissions have decreased by 29.2%**, from 2021 to 2022. **Thermal Coal Emissions decreased by 72.7%. The Oil and Gas Emissions decreased over the same period by 14.0%.** Snapshot shown above, with further information provided within section 7 of the report.

The Fund has already taken actions to support the initiatives that the Fund has previously agreed, including:

- 5% strategic allocation to sustainable equity and engaging with the WPP to support the development of a new active sustainable equity sub-fund;
- Engagement with managers on matters pertaining to ESG within private markets;
- Supporting investments with strong sustainability/ impact focus by allocating 4% of the total portfolio to local/ impact focused investments within private markets;
- Endeavouring to make impact-focused allocations within other private market asset classes (Private Equity, Private Debt, Infrastructure and Real Estate) where possible.

During the period of 31 March 2021 – 31 March 2022 the Fund has substantially increased its commitments to Impact focused portfolios within its Private Market mandates, allocating a further £102m across 5 additional commitments. These commitments are as follows:

Private Market Manager	Fund Name	Capital Committed (£m)
Capital Dynamics	Clwyd Clean Energy Wales	50
Brookfield Asset Management ("Brookfield")	Brookfield Global Transition Fund ("BGTF")	12
Copenhagen Infrastructure Partners	Energy Transition Fund I	17
Circularity Capital	European Growth II	10
Generation Investment Management	Generation IM Sustainable Solutions Fund IV	13

The remainder of the report sets out the disclosures of the Pension Fund Committee of the Clwyd Pension Fund under the Task Force on Climate-related Financial Disclosures (“TCFD”) framework, and covers the Fund year ending 31 March 2022. As such, it focuses on the areas of Governance, Strategy, Risk Management and Metrics and Targets.

Section 3

The TCFD Framework

The Financial Stability Board, an international body established by the G20 that monitors and makes recommendations about the global financial system, created the Task Force on Climate-related Financial Disclosures ("TCFD") framework in 2015. TCFD was created to improve and increase reporting of climate-related financial information that can promote more climate-informed investments. In 2017, the TCFD recommended a framework for disclosing how climate-related risks and opportunities are measured, monitored and managed by companies, asset managers and asset owners.

The recommendations are in four key areas:

The framework aims to:

- Improve climate-related data quality
- Increase focus on climate change
- Enable more informed decisions
- Provide a consistent framework for comparison

The Department for Levelling Up, Housing and Communities (DLUHC) has recently consulted on proposals for new requirements on LGPS ("Local Government Pension Schemes") administering authorities. Proposals for LGPS on governance and reporting of climate change risks are summarised in the next two pages. The Fund responded to the consultation and will continue to engage on this vitally important topic.

LGPS: Governance and reporting of climate change risks

Area	Proposal
Overall	Each LGPS Administering Authority (AA) must complete the actions listed below and summarise their work in an **annual Climate Risk Report.**
Proper advice	We propose to require that **each AA take proper advice** when making decisions relating to climate-related risks and opportunities.
Scope and Timing	Will apply to all LGPS AAs. The first reporting year will be the financial year 2023/24, and the regulations are expected to be in force by April 2023. The **first reports will be required by December 2024.**
Governance	AAs will be expected to establish and maintain, on an ongoing basis, oversight of climate related risks and opportunities. They must also maintain a process by which they can **satisfy themselves that officers and advisors are assessing and managing climate-related risks and opportunities.**
Strategy	AAs will be expected to **identify climate-related risks and opportunities on an ongoing basis and assess their impact on their funding and investment strategies**.
Scenario Analysis	AAs will be required to carry out **two sets of scenario analysis**. This must involve an assessment of their investment and funding strategies. One scenario must be **Paris-aligned** (meaning it assumes a 1.5 to 2 degree temperature rise above pre-industrial levels). Scenario analysis must be **conducted at least once in each valuation period.**
Risk Management	AAs will be expected to establish and maintain a process to **identify and manage climate-related risks and opportunities related to their assets**. They will have to integrate this process into their overall risk management process.

LGPS: Governance and reporting of climate change risks (continued)

Area	Proposal
Metrics	The proposed metrics that must be measured and disclosed annually, are set out below. 1. An **absolute emissions metric**. Under this metric, AAs must, as far as able, **report Scope 1, 2 and 3** greenhouse gas emissions. 2. An **emissions intensity metric**. We propose that all **AAs should report the Carbon Footprint of their assets** as far as they are able to. Selecting **an alternative emissions intensity metric such as Weighted Average Carbon Intensity (WACI) will be permitted**, but AAs will **be asked to explain their reasoning** for doing so in their Climate Risk Report. 3. **Data Quality metric**. Under the Data Quality metric, AAs will report the proportion the value of its assets for which its total reported emissions were **Verified, Reported, Estimated or Unavailable**. 4. **Paris Alignment Metric**. Under the Paris Alignment Metric, AAs will report the **percentage of the value of their assets** for which there is a **public net zero commitment** by 2050 or sooner.
Targets	AAs **will be expected to set a target in relation to one metric.** The target **will not be binding**. Progress against the target must be **assessed once a year**, and the target revised if appropriate. The chosen metric may be one of the four mandatory metrics listed above, or any other climate related metric recommended by the TCFD.
Disclosure	AAs will be **expected to publish an annual Climate Risk Report**. This **may be a standalone report, or a section in the AA's annual report**. Scheme members must be informed that the Climate Risk Report is available in an appropriate way.
Scheme Climate Report	**Scheme Advisory Board (SAB) should prepare an annual Scheme Climate Report including a link to each individual AA's Climate Risk Report** (or a note that none has been published) and aggregate figures for the four mandatory metrics. Report would also include a list of the targets which have been adopted by AAs.

Section 4
Governance

Governance approach

The Committee have ultimate responsibility for ensuring effective governance of climate-related risks and opportunities. The Fund maintains an Investment Strategy Statement (ISS), which details the key objectives, risks and approach to considering Environmental, Social and Governance (“ESG”) factors, such as climate change, as part of its investment decision making. The document is reviewed on at least a triennial basis.

The Fund recognises the importance of its role as stewards of capital and the need to ensure the highest standards of governance and promoting corporate responsibility in the underlying companies in which its investments reside. The Fund recognises that ultimately this protects the financial interests of the Fund and its beneficiaries. The Fund has a commitment to actively exercising the ownership rights attached to its investments, reflecting the Fund’s conviction that responsible asset owners should maintain oversight of the companies in which they ultimately invest and recognising that companies’ activities impact upon not only their customers and clients, but more widely upon their employees, other stakeholders and also wider society.

The Fund defines a Responsible Investment (RI) as:

> “Incorporating sustainability considerations within the investment process, including environmental, social and governance (ESG) factors for a broader perspective on risk and return opportunities.”

In developing its approach to RI, the Fund seeks to understand and manage the ESG and reputational risks to which it is exposed. This policy sets out the Fund’s approach to this.

The foundations of the Fund’s approach to RI are its Principles which are set out below:

- The Fund’s fiduciary duty is to act in the best interests of its members and employers. The Fund recognises that ESG issues create risk and opportunity to its financial performance, and will contribute to the risk and return characteristics. The Fund believes, therefore, that these factors should be taken into account in its Funding and Investment Strategies and throughout the decision making process.
- The Fund is a long-term investor, with pension promises for many years, and because of this, it seeks to deliver long-term sustainable returns.
- The Fund integrates ESG issues at all stages of the Fund’s investment decision making process.
- The Fund seeks to apply an evidence based approach to the implementation of Responsible Investment.
- The Fund recognises that transparency and accountability are important aspects of being a Responsible Investor and will demonstrate this by publishing its RI policy and activity for the Fund.

- The Fund has a duty to exercise its stewardship responsibilities (voting and engagement) effectively by using its influence as a long-term investor to encourage corporate responsibility.
- The Fund recognises the significant financial risk of not being a Responsible Investor and it seeks to ensure that this risk is mitigated through its Investment Policy and implementation.
- The Fund recognises the importance of Social/Impact investments which can make a positive social and environmental impact whilst meeting its financial objectives, and it will make selective investments to support this aim.

Oversight of climate change risks

The Fund recognises the importance in addressing the financial risks associated with climate change through its investment strategy, and believes that:

- Climate change presents a systemic risk to the overall stability of every economy and country, with the potential to impact on the members, employers and all of the holdings in the Fund's investment portfolio.
- Considering the impacts of climate change is not only the legal or fiduciary duty of the Fund, but is also consistent with the long term nature of the Fund. The Fund's investments need to be sustainable to be in the best interests of all key stakeholders.
- Engagement is the best approach to enabling the change required to address the Climate Emergency, however selective risk-based disinvestment is appropriate to facilitate the move to a low carbon economy.
- As well as creating risk, climate change also presents opportunities to make selective investments that achieve the required returns, whilst at the same time make a positive social and environmental impact, such as environmental infrastructure and clean energy.

Net Zero Commitment

As part of its commitment to RI the Fund has undertaken to evaluate and manage the carbon exposure of its investments to assist in ensuring an effective transition to a low-carbon economy. As part of this work, on 10 November 2021 the Clwyd Pension Fund Committee approved a strategy to achieve net-zero carbon emissions from its investment portfolio. This included carbon emissions analysis of the listed equity portfolio to provide a baseline for the Fund. **Specifically, the Committee agreed a target for the investments in the Clwyd Pension Fund, as a whole, to have net zero carbon emissions by 2045, with an interim target of carbon reduction of 50% by 2030.** Underlying this headline commitment, the plan also has a number of other key targets which are outlined later in the report.

The Fund will monitor and report against these targets annually, and may review and revise them as appropriate, particularly to ensure that targets and ambitions are in line with national and international developments and initiatives.

Pension Committee

The Fund is governed by the Clwyd Pension Fund Committee who have the responsibility for all Fund matters including governance, investment and funding strategies, accounting, employer and scheme member engagement, communications, and administration. The Pension Fund Committee delegates the day-to-day running of the Fund to officers. The Head of Clwyd Pension Fund has overall delegated powers for the management of the Fund on a day-to-day basis.

The Pension Fund Committee's principal aim is to carry out the functions of Flintshire County Council as the Scheme Manager and Administering Authority for the Clwyd Pension Fund in accordance with LGPS legislation. The Fund's management powers and responsibilities have been delegated by Flintshire County Council to the Committee including but not limited to the setting and delivery of the Fund's strategies, the allocation of the Fund's assets and the appointment of contractors, advisors and fund managers.

The members on the Clwyd Pension Fund Committee are not trustees of the Fund, however, they do have a fiduciary and public law duties to the Fund's scheme members and employers, which is analogous to the responsibilities of trustees in the private sector and they could be more accurately described as 'quasi trustees' responsibilities.

The Committee may also delegate a limited range of its functions to one or more officers of Flintshire County Council, which it does so under a formal Scheme of Delegation, which ensures timely decision making at an appropriate level.

No matters relating to Flintshire County Council's responsibilities as an employer participating within the Clwyd Pension Fund are delegated to the Pension Fund Committee, ensuring a clear separation of responsibility between the employer and the "quasi trustee" responsibilities.

Pension Board

The Pension Board assists the Fund in ensuring the effective and efficient governance and administration of the Pension Fund and assists the Fund in securing compliance with the LGPS Regulations and any other legislation relating to the governance and administration of the Fund. The Pension Board is not a decision making body in relation to the management of the Fund.

The Pension Board operates independently of the Pension Fund Committee.

LGPS Asset Pooling – Wales Pension Partnership (WPP)

The Wales Pension Partnership (WPP) for which Clwyd Pension Fund is a partner, is responsible for the implementation of the investment strategy of pooled funds. Non-pooled assets remain under the responsibility of the Fund and are overseen by the investment officers.

As part of the structure of the Wales Pension Partnership, a Joint Governance Committee (JGC) has been established which oversees the pooling of the investments of the eight Local Government Pension Scheme funds in Wales. The JGC meets a minimum of 4 times a year at one of the constituent authority offices and each meeting is webcasted. The JGC comprises one elected member from each Constituent Authority and a co-opted (non-voting) scheme member representative. The Fund's representative on the JGC is Cllr Ted Palmer, Chair Clwyd Pension Fund Committee (and currently Vice Chair of the JGC).

The WPP's Joint Governance Committee (JGC) has approved a responsible investment policy and a climate risk policy for the WPP. The policies represent a broad range of investment beliefs within the pool and show the desire of the WPP to be a leader in responsible investment. The WPP are currently a signatory of the UK Stewardship Code 2020.

The Fund currently has officer representation on the WPP's Responsible Investment Sub-Group, who are responsible for formulating and delivering WPP's Responsible Investment Workplan, as well as liaising with the WPP's Voting and Engagement Provider (Robeco). The group meet twice a quarter.

The Responsible Investment Sub Group has worked to develop reporting on the ESG and climate risk characteristics of Sub-Funds and intends to cascade this information down to Constituent Authorities. This reporting is being prepared independently of the reporting provided by the investment manager, serving to verify the information that is otherwise made available. Robeco also provide quarterly reporting on Voting and Engagement activity which has been shared with Constituent Authorities.

Fund's Advisors

Investment Consultant

The Committee of the Fund have appointed Mercer as Investment Consultant to the Fund. Mercer's role is to provide ongoing advice on investment strategy and manager appointments (where relevant). This includes advice on managing and monitoring investment-related risks, such as climate change and is considered at quarterly meetings. Mercer will assist in the production of the Fund's TCFD report on an annual basis.

Actuarial Advisor

The Committee have appointed Mercer Limited as the Fund's actuary, who has the following roles and responsibilities (amongst others):

- Act as a member of the Clwyd Pension Fund Pension Advisory Panel and the Funding and Risk Management Group
- To prepare valuations including the setting of employers' contribution rates at a level to ensure fund solvency, including the review of contributions between valuations
- To help the Fund to understand the potential funding impact of climate change (including the impact on financial and demographic assumptions and providing input into the climate risk analysis driving strategic asset allocation decisions).

Independent Advisor

The Committee have appointed Aon as the Independent Advisor to the Fund. Aon carries out an annual review of the governance of the Fund as a whole, against Aon's best practice governance framework. By seeking external assurance from an independent third party, the Fund and its stakeholders can be confident of an unbiased and unprejudiced view of the effectiveness of the Fund's stewardship processes. The Independent Advisor also acts as a member of the Clwyd Pension Fund Pension Advisory Panel.

Annual assessment of advisors

On an annual basis the Head of the Clwyd Pension Fund, Philip Latham completes review meetings with all service providers including but not limited to, the Fund's Investment Consultant and Independent Advisor.

Committee training and engagement

During the year to 31 March 2022, the Committee received training from its Investment Consultant, Mercer Limited ("Mercer"), covering climate-related investment risks and reporting requirements in line with the TCFD recommendations.

Climate change forms an explicit agenda item at least annually for the Committee. The Committee allocates an appropriate amount of time to climate change considerations at meetings and will allocate further time at future meetings if any analysis or wider industry research requires additional review and consideration.

Day-to-day implementation

The implementation of the management of climate change-related risk with respect to specific securities is delegated to WPP and third party portfolio managers. Each manager's approach to ESG issues and how these are integrated into their investment process is assessed as part of the manager selection and monitoring process.

Section 5

Strategy

The effects of climate change will be felt at different times in the future and to different extents. The Committee believe it is important to understand how the Fund's exposure to climate-related risks may change over time, when the risk exposure may be greatest and what actions can be taken now, or in the future, to avoid those risks becoming financially material to the Fund.

To help with this assessment, the Fund has defined short-, medium- and long-term time horizons for the scenario analysis of climate related risks. The scenario analysis conducted was done on the whole of the Fund's assets. The climate-related risks and opportunities that are relevant to the Fund vary over these periods. The Fund expects to revisit the relevance of these time periods in its next report.

Short Term (period to 2030)

Short term risks may present themselves through rapid market re-pricing as:

- Scenario pathways become clearer. For example a change in the likelihood of a 2°C scenario occurring.
- Market awareness grows. For example, the implications of the physical impacts of climate change become clearer to markets.
- If policy changes catch markets by surprise. For example, if a carbon price is introduced across key markets to which the portfolio is exposed, at a sufficiently high price to impact behaviour.

Medium Term (period to 2050)

Over the medium term, risks associated with the transition to a low carbon economy are likely to dominate. These include the development of technology and low carbon solutions. Policy, legislation and regulation are likely to also play a key role at the international, national and subnational level. Technology and policy changes are likely to produce winners and losers both between and within sectors and lead to stranded asset risks.

Long Term (period to 2100)

Over the long term, physical risks are expected to come to the fore. This includes the impact of natural catastrophes leading to physical damages through extreme weather events. Availability of resources is expected to become more important if changes in weather patterns (e.g. temperature or precipitation) affect the availability of natural resources such as water.

Strategic actions undertaken to manage climate risks

The Fund have committed to a 5% strategic allocation to sustainable equity to support the Fund's net zero ambitions by 2045 and the interim targets. Over the period in question these assets were held within the BlackRock World ESG Equity Fund.

The Fund has always been committed to making responsible decisions and acting in a responsible manner. In 2012, the Fund engaged with managers on matters pertaining to ESG by sending out surveys to all the private market managers on such matters. In 2017, the Fund had a sustainability policy in place which was well before any formal requirement for such. The Fund at the time supported investments with strong sustainability / impact focus and increased its allocation to infrastructure from 4% to 8%, with a clean energy emphasis. The Fund also wrote to all private equity and real asset managers to determine how aligned the current investments were to the United Nations Sustainable Development Goals (UNSDG).

Clwyd have a strategic target to allocate 4% of their total portfolio to Local/Impact investments within private markets. Outside of this specific Local/Impact bucket, Clwyd also endeavour to make impact-focused allocations within their other private markets asset classes (Private Equity, Private Debt, Infrastructure and Real Estate) where possible, subject to the availability of investable opportunities in the market.

From 2006 to March 2021, the Fund had committed £141.8m to Impact focused investments. During the period of 31 March 2021 – 31 March 2022 the Fund has substantially increased its commitments to Impact focused portfolios within its Private Market mandates, allocating a further £102m across 5 additional commitments. These commitments are as follows:

Private Market Manager	Fund Name	Capital Committed (£m)
Capital Dynamics	Clwyd Clean Energy Wales	50
Brookfield Asset Management ("Brookfield")	Brookfield Global Transition Fund ("BGTF")	12
Copenhagen Infrastructure Partners	Energy Transition Fund I	17
Circularity Capital	European Growth II	10
Generation Investment Management	Generation IM Sustainable Solutions Fund IV	13

When making private markets commitments, the Fund receives a Research Report from Mercer on all potential commitments. In these reports, each fund is given an ESG score and there is a section of the report dedicated to ESG. Clwyd takes these ESG scores into account when deciding whether or not to commit to a particular private markets manager.

The Fund takes a long-term view with regards its investment and funding strategies, given the long-term nature of the payments due to beneficiaries over multiple decades. The Fund's primary investment objective therefore is to achieve sufficient excess investment returns relative to the growth of liabilities to meet the funding objectives set out above on an on-going basis, whilst maintaining an appropriate balance between long-term consistent investment performance and the funding objectives. This means that the Fund inherently takes a long term view to investing in order to align its investments with its long term liabilities.

Investment strategy climate change scenario analysis

In 2020, the Committee commissioned strategic climate change scenario analysis on the Fund's strategic asset allocation to assess the potential implications of climate change.

The analysis covers the Fund's whole portfolio, modelling three forward looking climate change scenarios. Each of the scenarios reflect different climate change policy ambitions that result in varying CO_2 emissions pathways and levels of economic damages related to climate change. These have been developed using existing climate change models (Cambridge Econometrics' E3ME model) and through an extensive literature review. The three scenarios used in the modelling are outlined below.

- **2ºC scenario:** a low carbon economy transformation most closely aligned with both successful implementation of the Paris Agreement's ambitions and the greatest chance of lessening physical damages
- **3ºC scenario:** some climate change action but a failure both to meet the Paris Agreement 2ºC objective and meaningfully alleviate anticipated physical damages
- **4ºC scenario:** reflecting a fragmented policy pathway where current commitments are not implemented and there is a serious failure to alleviate anticipated physical damages

Summary results of climate change scenario analysis

Annualised climate change impact on portfolio returns – to 2030, 2050 and 2100

		Strategic Asset Allocation
2ºC	2030	0.30%
	2050	0.09%
	2100	-0.02%
3ºC	2030	-0.01%
	2050	-0.06%
	2100	-0.10%
4ºC	2030	-0.07%
	2050	-0.13%
	2100	-0.19%

≤ -10 bps   > -10 bps, < 10bps   ≥ 10 bps

Key Findings

A summary of the key findings from the climate change scenario analysis are shown below:

- **Key Finding 1 -** A 2ºC scenario leads to superior economic outcomes relative to other climate change scenarios assessed in this model. Therefore policy-makers, companies, and investors have an incentive to work towards a 2ºC scenario, which presents an investment opportunity.
- **Key Finding 2 -** Prioritise key asset classes that capture low carbon transition opportunities
- **Key Finding 3 -** Prioritise key listed equity sectors to manage low carbon transition risks and opportunities
- **Key Finding 4 -** Stress tests help consider sudden surprises

For further detail on scenario methodology, key findings and a summary of portfolios analysed, please refer to Appendix A**.**

The Fund will incorporate funding level analysis into future climate change scenario modelling. Future analysis will also be done using the latest climate change scenario modelling methodology available at the time.

Section 6

Risk Management

A key part of the Committee's role is to understand and manage risks that could have a financially material impact on both the Fund's investments and the wider funding position. Climate change is one of the risks that the Fund consider alongside other financially material risks. These risks could impact the Fund's ability to achieve the require investment returns to ensure that the Fund remains affordable for employers and members.

This section summarises the primary climate-related risk management processes and activities of the Fund. These help the Committee understand the materiality of climate-related risks, both in absolute terms and relative to other risks that the Fund is exposed to. The Fund prioritise the management of risks primarily based on its potential impact on the financial stability of the Fund and contribution rates.

Governance

- The Fund's Investment Strategy Statement is reviewed on a triennial basis and sets out how investment climate-related risks are managed and monitored
- A risk register is maintained which includes explicit climate risks, the risk register is reviewed quarterly by officers, advisors and the Committee
- The Committee receive training at least annually on climate-related issues. The training allows the Committee to challenge whether the risks and opportunities are effectively allowed for in their governance processes and wider activities, and to be able to challenge their advisors to ensure the governance support and advice adequately covers the consideration of climate-related risks and opportunities.

Strategy

- Mercer will take climate-related risks and opportunities into account as part of the wider strategic investment advice provided to the Fund.
- Climate scenario analysis for the Fund will be reviewed at least triennially, or more frequently if there has been a material change to the strategic asset allocation. A summary of the Fund's climate scenario analysis is included in the strategy section of this report.
  - The Fund also undertook further transition capacity analysis of the Fund using Mercer's Analytics for Climate Transition ("ACT") tool, which carried out analysis on the Fund's Listed Equities (Global and Emerging Markets Equity), Synthetic Equity and Multi-Asset Credit (MAC) portfolios, as well as on part of the Tactical Asset Allocation (TAA) portfolio as at 31 March 2022. Overall, the tool analysed c.40.5% of the total Fund. The aim of the analysis was to:
    - Monitor progress against the Fund's listed equity targets across decarbonisation, exposure to fossil fuels (oil, gas, coal) and explore the proportion of emissions within high impact sector that are currently under engagement or aligned with a low carbon future
    - Understand the transition capacity of the Fund's listed equity, MAC and TAA portfolios

- Present an updated high level implementation plan for listed equities that incorporates further asset classes over time

Reporting

- The Committee will receive annual reports of climate-related metrics and progress against targets in respect of the assets held in the Fund. The Committee, through delegation to officers, may use the information to engage with the investment managers.
- The Fund receives voting and engagement activity information on a quarterly basis and reports on an annual basis within the annual report and accounts and its annual Stewardship Code submission.
- The Fund have delegated all voting rights to the Wales Pension Partnership (WPP), who in turn, have appointed Robeco to undertake engagement on its behalf. Robeco have a dedicated team of engagement specialists and voting analysts who work closely with the sustainable investment research analysts and portfolio managers on financially material ESG issues.
- Robeco provide the eight Constituent Authorities within the WPP (of which Clwyd Pension Fund is one) voting and engagement information on a quarterly basis. In addition, the WPP Responsible Investment sub-group discuss engagement with Robeco at regular meetings.
- In addition, officers and JGC also receive Responsible Investment & Climate Risk Reports from Hymans Robertson, who are the currently advisor to the WPP.

Manager Selection and Monitoring

- The Committee, with advice from Mercer in its role as Investment Consultant and the officers, will consider an investment manager's firm-wide and strategy-specific approach to managing climate-related risks and opportunities when appointing a new manager and in the ongoing review of a manager's appointment.
- Mercer rates investment managers on the extent of integration of ESG factors (including climate change) into their processes. A manager's stewardship process forms part of the rating assessment. This is considered at the firm level and at the investment strategy/fund level.
- Until the WPP are able to take on the Fund's commitments to Private Markets, the Fund is taking recommendations from its Investment Consultants in the allocation of Private Market funds. The Fund has mandated that priority is given to impact and sustainable funds and/ or those with a high ESG rating (ESG1 and ESG2) assigned by the Mercer following the detailed due diligence process.
- In 2022, the Fund has in consultation with Mercer, developed a monitoring template which it will use to monitor all of its Private Market managers going forward. The template specially picks up information from managers on ESG and impact, including but not limited to:
    - Does the manager have a Sustainable Investment Policy?

- Is the manager doing anything to contribute to net zero or a specified carbon emissions reduction target?
- Impact/ ESG considerations that will help with TCFD and future TNFD reporting

Active Stewardship

Stewardship is the responsible allocation, management and oversight of capital to create long-term value for clients and beneficiaries leading to sustainable benefits for the economy, the environment and society. Stewardship activities can help hold companies to account and ensure they are taking a meaningful approach in this area.

The Financial Reporting Council (FRC) first published the UK Stewardship Code in 2010, and revised it in 2012. In October 2019 the FRC issued an updated and increasingly demanding version, the UK Stewardship Code 2020. The Code sets out a number of areas of good practice to which the FRC believes institutional investors should aspire.

In practice the Fund continues to apply the requirements of the Code both through its arrangements with its asset managers and through membership of the Local Authority Pension Fund Forum (LAPFF).

The Fund is committed to reviewing its compliance against the latest code and has submitted its Stewardship report for the year ending 31 March 2022 in October 2022. At the time of writing, the Fund is waiting on the outcome of the submission.

As a member of the WPP, the Fund expects both WPP and the underlying fund managers to comply with the Stewardship Code. WPP has appointed Robeco as its Voting and Engagement provider and they are assisting in maintaining a voting policy and engagement principles that are in keeping with the LAPFF. In addition, Robeco are responsible for implementing the voting policy and reporting on it.

Climate Risks and Opportunities

The effects of climate change will be felt over many decades. The Fund has considered two types of climate-related risks and opportunities in its climate scenario analysis:

Transition risks and opportunities

This covers the potential financial and economic risks and opportunities from the transition to a low carbon economy (i.e. one that has a low or no reliance on fossil fuels), in areas such as:

- Policy and legislation
- Market
- Technology
- Reputation

Risks include the possibility of future restrictions, or increased costs, associated with high carbon activities and products. There are also opportunities, which may come from the development of low-carbon technologies. In order to make a meaningful impact on reducing the extent of global warming, most transition activities need to take place over the next decade and certainly in the first half of this century.

Physical risks and opportunities

The higher the future level of global warming, the greater physical risks will be in frequency and magnitude. Physical risks cover:

- Physical damage (storms; wildfires; droughts; floods)
- Resource scarcity (water; food; materials; biodiversity loss)

Physical risks are expected to be felt more as the century progresses, although the extent of the risks is highly dependent on whether global net zero greenhouse gas emissions are achieved by 2050.

There are investment opportunities, for example, in newly constructed infrastructure and real estate assets that are designed to be resilient to the physical impacts of climate change, as well as being constructed and operated in a way that have low or no net carbon emissions. There are also opportunities for investment in those companies or industries that focus on energy conservation and resource efficiency.

Section 7

Metrics and Targets

Metrics and targets used to assess and manage relevant climate change-related risks and opportunities, in line with strategy and risk management

Key Metrics

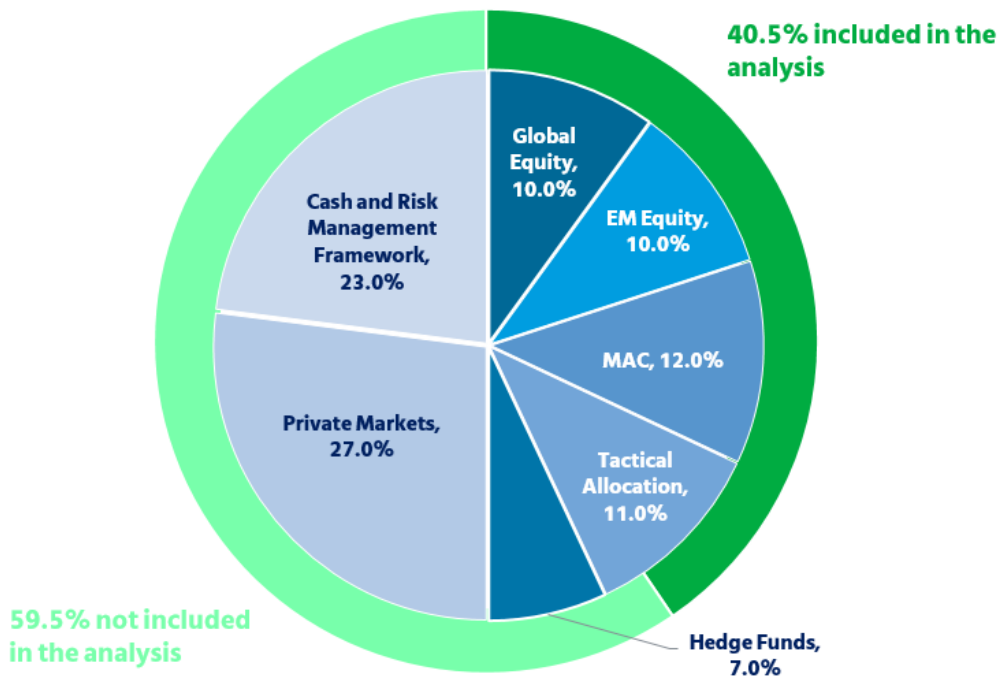
The Committee has chosen to present five climate-related metrics in this report. The climate-related metrics help the Committee to understand the climate-related risk exposures and opportunities in the Fund's investment portfolios and identify areas for further risk management, including investment manager portfolio monitoring, and voting and engagement activity and priorities. The metrics in this report are:

1. **Absolute emissions metric**
2. **Emissions intensity metric: Carbon Footprint**
3. **Emissions intensity metric: Weighted Average Carbon Intensity (WACI)**
4. **Portfolio alignment metric: Implied Temperature Rise (ITR)**
5. **Portfolio alignment metric: Science Based Targets Initiative (SBTi)**

The Fund has agreed to use the carbon footprinting metric as the primary metric for monitoring decarbonisation progress, whilst also monitoring progress against absolute emissions and weighted average carbon intensity.

The Fund has adopted a baseline date of 31 March 2021, from which all percentage reduction targets will monitored against annually.

Fund strategic asset allocation as at 31 March 2022



Carbon metrics have been provided on 40.5% of the Fund's Strategic Asset Allocation. Consistent with the previous year's analysis, the updated analysis consists of the Fund's global and emerging market equity mandates.

As the Tactical Asset Allocation portion of the SAA is tactical and short term by its very nature, this portion of the portfolio was excluded from the 2021 baseline analysis and target setting. Whilst the majority of the TAA portfolio was analysed from a metrics perspective, some of the underlying components were not able to be analysed owing to data availability.

There is an active ongoing exercise to gather carbon metrics data on the property holdings.

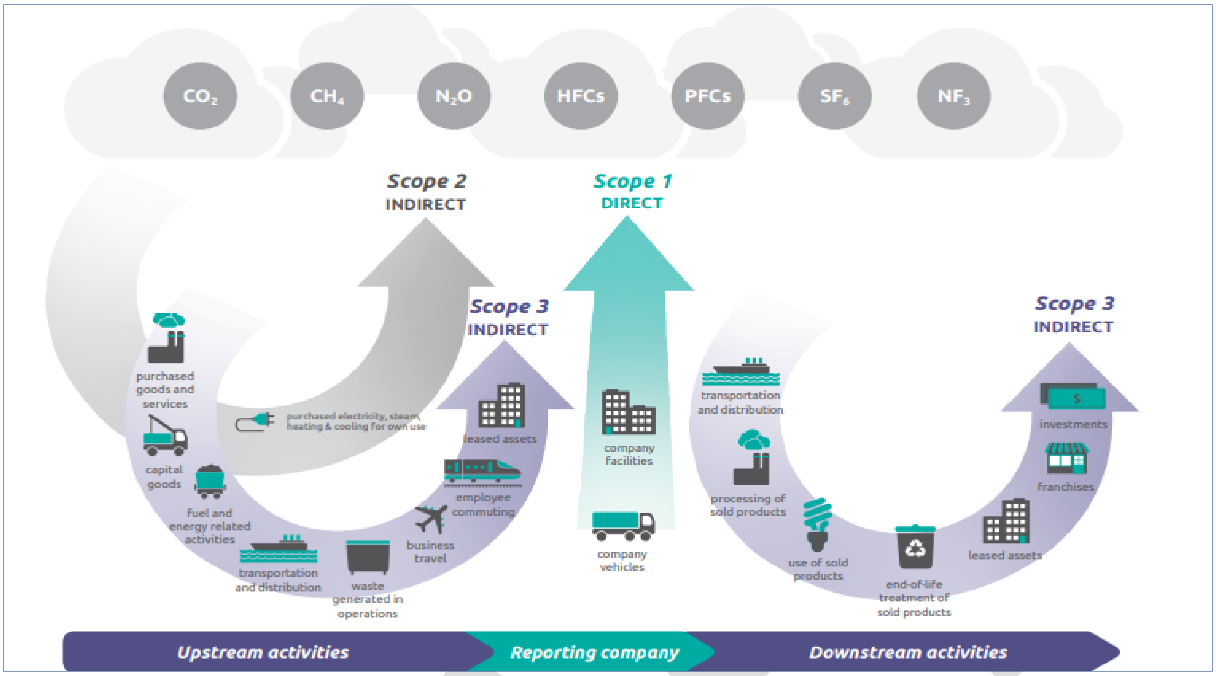
Over time as consensus around methodology for less conventional asset classes grows, this analysis will cover a greater proportion of the Fund.

The Fund recognises the challenges with various metrics, tools and modelling techniques used to assess climate change risks. The Committee with its officers aim to work with the investment adviser and investment managers to continuously improve the approach to assessing and managing risks over time as more data becomes available. The Technical Section of this report sets out the data limitations and assumptions used in collating these metrics.

Overview of each metric

Absolute Emissions

This metric represents the underlying investee company's or issuer's reported or estimated greenhouse gas emissions, where available. It includes various scopes of emissions, which are summarised in the following diagram.



Source: MSCI ESG Research LLC. Reproduced by permission.

There are seven recognised greenhouse gases, as defined by the GHG Protocol. In order to simplify reporting, each greenhouse gas is calibrated relative to carbon dioxide and is reported as 'carbon dioxide equivalent' emissions (CO2e).

For the purpose of this report, only scope 1 and 2 emissions have been reported, although in the annual analysis reviewed by Committee Scope 3 data is considered. The absolute emission metric is a proxy for the share of GHG emissions that are 'owned' by the Fund through investing in the underlying companies and issuers, including countries (referred to as 'sovereign exposure' through government debt).

Emissions intensity metric: Carbon Footprint and Weighted Average Carbon Intensity (WACI)

Carbon Footprint is an intensity measure of emissions that takes the Total GHG Emissions figure and weights it to take account of the size of the investment. This metric is calculated by taking the total carbon emissions of the investment and dividing by the current value of the investment.

Analysing a fund's Carbon Footprint assists the Committee in identifying carbon-intense companies and sector within the Fund's portfolio. The Fund has therefore chosen this metric to assist them in prioritising carbon intense parts of the investment strategy for potential re-allocation or engagement as a means of mitigating associated climate-related risks.

WACI is calculated for each company as (Scope 1 and 2 carbon emissions / $m revenue). This provides the Committee with an understanding of the potential sensitivity of underlying companies to transition risks.

Portfolio alignment metric: Implied Temperature Rise (ITR) and Science Based Targets Initiative (SBTi)

ITR is a forward-looking metric that considers the pledges, commitments and business strategy changes that underlying investee companies/issuers have made. It provides a prediction of the potential temperature rise over the rest of the century based on the activities of those companies and issuers. The metric illustrates the degree of portfolio alignment with the goals of the Paris Agreement (notably to limit warming to well below 2°C by the end of the century).

This metric has been chosen for inclusion in this report because of its simplicity in presentation and a useful way to see, at a glance, the positioning of a fund towards a low carbon economy. Asset allocations with high Implied Temperature Rise metrics are invested in companies or issuers that are not transforming their businesses or activities in order to reduce the reliance on fossil fuels. This is also a measure of climate transition risk with greater transition risk highlighted in asset allocations with a higher Implied Temperature Rise.

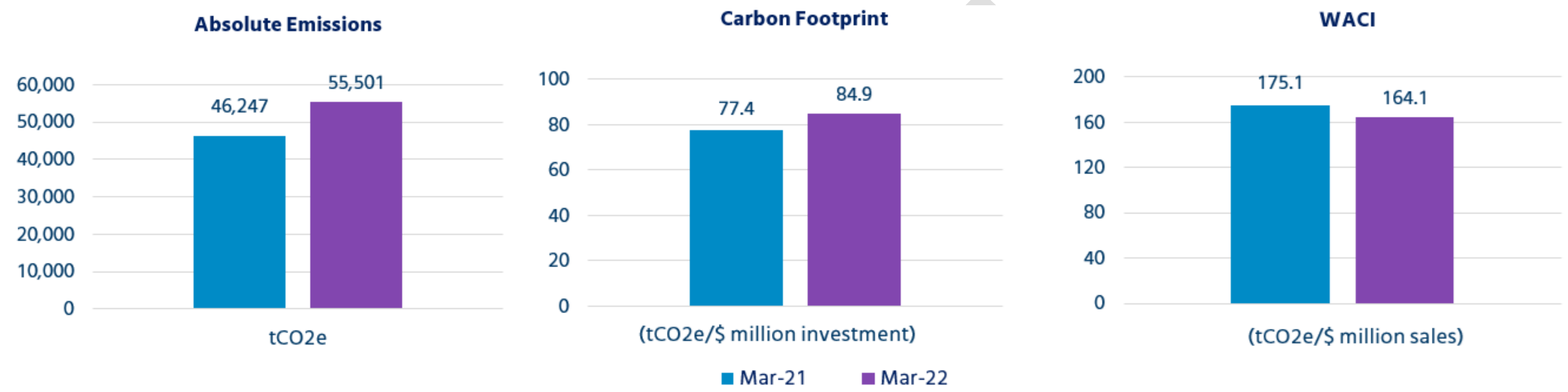
The Science Based Targets Initiative (SBTi) metric measures the proportion of companies in the portfolio with one or more active carbon emissions reduction target/s approved by the SBTi.

Summary of Emissions Analysis - Annual Monitoring as at 2022

		Portfolio	SAA Weight %	Absolute Emissions Coverage	Absolute emissions (tCO2e based on value of investment)	WACI / Sovereign Carbon Intensity Coverage	WACI (tCO2e/$million sales) / Sovereign Carbon Intensity (tCO2e / $M PPP GDP)	Carbon Footprint Coverage	Carbon Footprint (tCO2e/$million investment)	Implied Temperature Rise (°C)	*SBTi Alignment**
					Scope 1 + 2		Scope 1 + 2		Scope1 + 2		
Included in the Baseline	Global Equity	BlackRock World ESG	5.0	99.2%	**4,063**	99.2%	**83.7**	99.1%	**24.9**	**2.2**	39.6%
		Russell WPP Global Opportunities	5.0	98.0%	**11,246**	98.0%	**116.5**	98.0%	**68.8**	**2.4**	26.7%
	EM Equity	Russell WPP EM Equity	10.0	95.6%	**40,193**	95.6%	**228.1**	95.6%	**122.9**	**2.9**	4.0%
	Total Listed Equities (ex. TAA)		20.0	97.1%	**55,501**	97.1%	**164.1**	97.0%	**84.9**	**2.6**	18.5%
	Credit	Russell WPP Multi-Asset Credit**	4.0	54.1%	**22,216**	57.9%	**381.2**	53.9%	**170.5**	**3.5**	5.8%
	Total Listed Equities and Corporate Bonds (ex. TAA)		24.0	90.0%	**77,718**	90.6%	**200.2**	89.9%	**99.1**	**2.7**	16.4%
	Tactical Allocation	BlackRock EM Equity	1.6	99.4%	**7,143**	99.5%	**320.1**	99.4%	**134.5**	**2.8**	5.1%
		BlackRock European Equity	0.5	99.4%	**1,004**	99.4%	**104.5**	99.3%	**62.6**	**2.1**	48.6%
		BlackRock US Opportunities	1.1	93.5%	**1,593**	94.1%	**180.7**	93.5%	**43.4**	**2.7**	19.4%
		LGIM Infrastructure Equity MFG	2.0	99.8%	**12,085**	99.8%	**1,084.9**	99.8%	**184.2**	**3.5**	29.7%
		LGIM North American Equity Index	1.1	98.0%	**1,176**	98.1%	**141.2**	98.0%	**34.2**	**2.2**	32.9%
		LGIM UK Equity Index	0.8	87.1%	**2,079**	86.7%	**128.9**	86.7%	**75.8**	**2.3**	36.8%
		Ninety-One Global Natural Resources	1.4	99.0%	**25,206**	99.0%	**815.5**	99.0%	**554.5**	**4.6**	5.1%
	Total Tactical Allocation		8.5	97.3%	**50,285**	97.3%	**509.4**	97.2%	**180.5**	**3.1**	21.8%
	Sovereigns	Russell WPP Multi-Asset Credit**	2.3	95.5%	**21,349**	92.0%	**272.6**	-	**-**	**-**	-
	Synthetic Eq.	Synthetic Equity***	-	-	**-**	99.8%	**138.9**	99.7%	**37.2**	**2.2**	39.6%

*This metric measures the proportion of companies in the portfolio with one or more active carbon emissions reduction target/s approved by the Science Based Targets Initiative (SBTi).
Percentages considering the respective asset class allocation. For Russell WPP Multi-Asset Credit, these represent a 33.2% and a 19.2% fund allocation to, respectively, corporate bonds and sovereign bonds. The remainder of the fund is allocated to asset classes not covered by the analysis, e.g., mortgages, swaps and loans. * Synthetic Equity mandate composed of: 30% Euro Stoxx 50 Index, and 70% S&P 500 Index.

Summary of Emissions Analysis - Listed Equities (ex TAA)



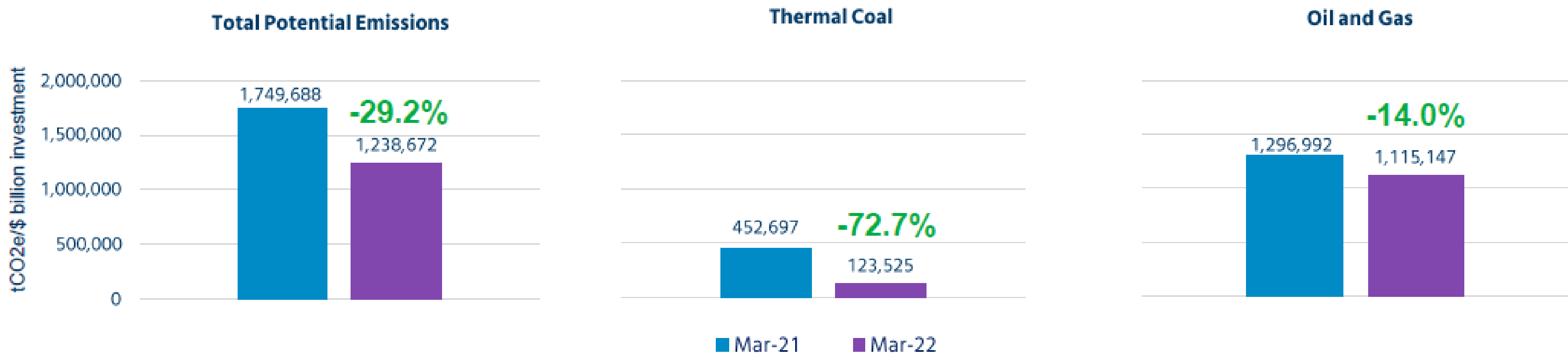
The **absolute emissions of the Fund's listed equity portfolio has increased by 20.0%** over the one year period from 31 March 2021 to 31 March 2022. The **Carbon Footprint increased by 9.7%** over the same time period, whilst the **Weighted Average Carbon Intensity (WACI) decreased over the same period by 6.3%.**

The Fund's listed equity carbon footprint rose over the period due primarily to the changes in the Emerging Market Equity portfolio. The developed market equity exposure overall saw a fall in its carbon footprint over the period.

Conversely, the changes to the EM mandate marginally lowered the WACI of the EM portfolio over the year. This along with decreases in WACI in the developed equity holdings led to the overall listed equity WACI falling by 6.3% over the year.

In respect of absolute emissions, this increased by c.20% over the year. It should be noted that absolute emissions are impacted by both the amount of assets being analysed as well as the changes to the companies' enterprise values as well as emissions, therefore exact attribution is not yet possible. Given the listed equity portfolio has seen an increase in carbon footprint, this result is likely driven by increases in underlying carbon intensity as well as an overall increase in the amount of assets being analysed.

Fossil Fuels – Potential Emissions – Listed Equities



In 2021, the Fund set a target to reduce fossil fuel exposure relating to coal by 90% by 2025 and 95% by 2030. An Oil & Gas exposure reduction target of 70% by 2025 and 95% by 2030 was also set. Progress against these targets is measured using potential emissions, which is an intensity metric linked to the emissions that would be produced should reserves from companies held in the portfolio be burnt.

Over the year, listed equity portfolio **Total Potential Emissions have decreased by 29.2%**, from 2021 to 2022. **Thermal Coal Emissions decreased by 72.7%. The Oil and Gas Emissions decreased over the same period by 14.0%.**

Relative to the 2021 baseline, the decreases shown above principally reflect changes to the investment manager line-up, driven by the introduction of the Russell WPP Emerging Markets fund, which replaced the Wellington Core, Wellington Local and BlackRock EM mandates.

The BlackRock World ESG and Russell WPP Global Opportunities mandates, which were the only two common funds between both analyses, have moved in opposite directions. The Russell WPP Global Opportunities fund saw its Potential Emissions decrease across both categories, whilst the BlackRock World ESG saw increases in its Potential Emissions across both categories. Oil & Gas Potential emission are found in all three equity mandates, however with the majority found within both the WPP EM and global equity funds. We recommend focusing engagement with WPP in the first instance in order to drive further decreases.

Targets

Net Zero Commitment

As part of its commitment to RI the Fund has undertaken to evaluate and manage the carbon exposure of its investments to assist in ensuring an effective transition to a low-carbon economy. As part of this work, on 10 November 2021 the Clwyd Pension Fund Committee approved a strategy to achieve net-zero carbon emissions from its investment portfolio. This included carbon emissions analysis of the listed equity portfolio to provide a baseline for the Fund. Specifically, the Committee agreed a target for the investments in the Clwyd Pension Fund, as a whole, to have net zero carbon emissions by 2045, with an interim target of carbon reduction of 50% by 2030. Underlying this headline commitment, the plan also has a number of other key targets as outlined below:

a) for the Fund as a whole:

- to have at least 30% of the Fund's assets allocated to sustainable investments by 2030
- to expand the measurement of the carbon emissions of the Fund's investments to include all assets by the end of 2023.

b) within the Listed Equity portfolio:

- to achieve a reduction in carbon emissions of 36% by 2025 and 68% by 2030
- to target at least 30% of the Listed Equity portfolio to be invested in sustainable assets by 2030
- to reduce fossil fuel exposure relating to oil and gas by 70% by 2025 and 90% by 2030
- to reduce fossil fuel exposure relating to coal by 90% by 2025 and 95% by 2030
- to engage with the biggest polluters within the Fund's Listed Equity portfolio as part of an overarching stewardship and engagement strategy, to achieve:
    - by 2025, at least 70% of organisations in carbon-intensive sectors have clearly articulated and credible strategies to attain net zero or are subject to engagement to achieve this objective.
    - by 2030, at least 90% of organisations in carbon-intensive sectors have clearly articulated and credible strategies to attain net zero or are subject to engagement to achieve this objective.

As previously mentioned, the Fund will monitor and report against these targets at least annually, and may review and revise them as appropriate, particularly to ensure that targets and ambitions are in line with national and international developments and initiatives.

Suitability of additional metrics

The Committee have undertaken education on the proposed climate change metrics forming part of the upcoming regulations. They will assess the suitability of these metrics and incorporate them into next year's report.

Actions to achieve targets going forward

Officers of the Clwyd Pension Fund have been actively engaged with the WPP in the development of a new active sustainable equity sub-fund, in order to bring a solution for all of the constituent authorities in Wales who are partners within the WPP. Once the fund becomes available, the Clwyd pension Fund will invest in the sustainable listed equity fund.

Key areas of focus for the next 12 to 18 months are summarised below:

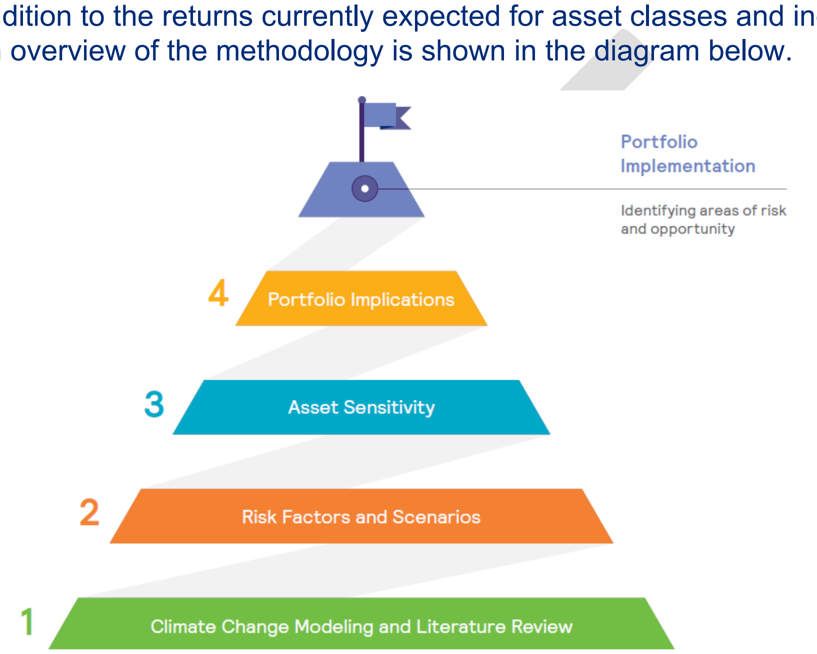
- Setting more granular targets across:
  - Sustainable / climate solutions
  - Transition alignment (SBTi – transition to net zero)
  - Engagement and Stewardship
- Expand the net zero approach beyond the listed equity portfolio to property, infrastructure, private equity and multi-asset credit (data permitting)
- Integrate climate risk into the Tactical Asset Allocation guidelines
- Consider connections to biodiversity / natural capital.

Overall, the insights and areas of focus should be used to help shape discussions with WPP and support climate change reporting (TCFD).

Appendix A

Climate Scenario Methodology

The Mercer climate change scenario model isolates transition and physical risk factors and maps the relative impact of those risk factors under three climate change scenarios. The Mercer climate change scenario modelling estimates a ‘climate change impact on return’, which is in addition to the returns currently expected for asset classes and industry sectors in the future. An overview of the methodology is shown in the diagram below.



Climate Change Modeling and Literature Review

The modeling foundations are provided by a third-party macroeconomic model, E3ME, which draws upon the "GENIE" integrated assessment model (IAM). IAMs combine climate science and economic data to estimate the costs of mitigation, adaptation and physical damages.

Risk Factors and Scenarios

Three climate change scenarios provide a framework for the relative impacts for identified climate change risk factors over time.

Asset Sensitivity

The sensitivity to the climate change risk factors is determined for different asset classes and industry sectors.

Portfolio Implications

The sensitivity and scenarios are integrated into Mercer's investment modeling tool to estimate the impact of climate change on investment portfolio returns.

Current limitations in data and methodology available for modelling climate change, and in particular physical damage risks, together with the myriad of climate change factors not yet captured by available modelling approaches, mean the resulting “climate change impact on return” magnitudes are likely to be underestimated (as highlighted in “The Sequel” public report). This, combined with long-term timeframes, means the annual “climate change impact on return” figures are relatively small in absolute terms in some cases, but are often meaningful when considered on a cumulative basis, The use of this model for strategic asset allocation decisions should be in conjunction with other relevant modelling, analysis and advice that considers the non-climate change impact on risk and return parameters and circumstances of the Fund.

Appendix B

Portfolio Analysed for Scenario Analysis

Asset Class Category	Asset Class	SAA (%)
Global Equity	MSCI ACWI	5.0
Emerging Market Equity	MSCI Emerging Market	10.0
ESG Tracker Equity [2]	Sustainable Equity (Global)	1.25
	Low Carbon Equity (Global)	3.75
Multi Asset Credit and Private Debt [3]	Global Investment Grade Credit	4.0
	Global High Yield Debt	4.0
	Emerging Market Debt	4.0
	Private Debt	3.0
Hedge Funds	Hedge Funds	7.0
Best Ideas Portfolio[4]	MSCI ACWI	3.65
	Global High Yield Debt	3.7
	Infrastructure	3.65
Property	UK Real Estate	4.0
Infrastructure	Infrastructure	8.0
Private Equity	Private Equity	8.0
Impact Portfolio [5]	Sustainable Private Equity	4.0
Liability Driven Investment	UK Gilts	18.0
Cash[6]	Cash	5.0
	TOTAL	**100**

Note: Figures may not sum due to rounding. SAA = Strategic Asset Allocation.

1. The Risk Management Framework is built on a Liability Driven Investment (LDI) approach and includes synthetic equity, currency hedging and equity protection, but for this modelling we have only included the physicals.
2. We have modelled the BlackRock ESG Tracker Equity as 25% sustainable equities and 75% low carbon equities.

3. We have modelled the Multi-Asset credit as a mix of Investment Grade, High Yield and Emerging Market debt.
4. We have modelled the Best Ideas portfolio (Diversified Growth Fund like) as a mix of Equity, High Yield Debt and Infrastructure.
5. We have modelled the impact portfolio as sustainable private equity.
6. We modelled cash as part of Liability Driven Investment, given the climate model has limitations in the number of categories available.

Appendix C

Climate Change Glossary

Carbon footprint: The amount of carbon dioxide (or other greenhouse gasses) released into the atmosphere as a result of the activities of a particular individual, organization or community. Carbon footprint is calculated for each company as (Scope 1 and 2 carbon emissions / $m investments). See also Scope 1, 2, 3 emissions and Weighted Average Carbon Intensity (WACI).

Carbon intensity: The amount of emissions of carbon dioxide (or other greenhouse gasses) released per unit of another variable such as revenue, gross domestic product (GDP), per $1million invested etc. See also Weighted Average Carbon Intensity (WACI).

Carbon price: The price for avoided or released carbon dioxide (CO2) or CO2-equivalent emissions. This may refer to the rate of a carbon tax, or the price of emission permits. In many models that are used to assess the economic costs of mitigation, carbon prices are used as a proxy to represent the level of effort in mitigation policies.

Carbon neutrality: Achieved by offsetting emissions by paying for credits (usually certified via new forestry equivalents that provide carbon removal). Carbon neutrality is similar to net zero targeting – the latter requires actual emissions reductions to meet targets though (rather than purchasing offsets). See also Net Zero CO2 emissions.

Decarbonisation: The process by which countries, individuals or other entities aim to achieve zero fossil carbon existence. Typically refers to a reduction of the carbon emissions associated with electricity, industry and transport.

Global warming: The estimated increase in global mean surface temperature expressed relative to pre-industrial levels unless otherwise specified. See also Pre-industrial.

Greenhouse gases: Gases in the planet's atmosphere which trap heat. They let sunlight pass through the atmosphere but prevent heat from leaving the atmosphere. Greenhouse gases include: Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF6), Nitrogen Trifluoride (NF3).

Inevitable policy response: A scenario that expects an acceleration of climate-related policy announcements in 2023−2025, which has been supported by the Principles for Responsible Investment (PRI).

Mitigation (of climate change): A human intervention to reduce emissions or enhance the sinks of greenhouse gases.

Mitigation strategies: In climate policy, mitigation strategies are technologies, processes or practices that contribute to mitigation, for example, renewable energy (RE) technologies, waste minimization processes and public transport commuting practices.

Net zero CO2 emissions: Net zero carbon dioxide (CO2) emissions are achieved when CO2 emissions are balanced globally by CO2 removals over a specified period. The term "net zero" is also typically associated with the 2050 date or earlier, as this is aligned with the scientific recommendations to achieve a 1.5°C scenario. See also Carbon neutrality (which differs slightly).

Paris Agreement: The Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) was adopted on December 2015 in Paris, at the 21st session of the Conference of the Parties (COP) to the UNFCCC. The agreement, adopted by 196 Parties to the UNFCCC, entered into force on 4 November 2016 and as of May 2018 had 195 Signatories and was ratified by 177 Parties. One of the goals of the Paris Agreement is “Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels”, recognising that this would significantly reduce the risks and impacts of climate change. Additionally, the Agreement aims to strengthen the ability of countries to deal with the impacts of climate change.

Physical risks: Dangers or perils related to the physical or natural environment that pose a threat to physical assets e.g. buildings, equipment and people. Mercer’s scenario analysis grouped these into the impact of natural catastrophes (for instance sea level rise, flooding, wildfires, and hurricanes) and resource availability (particularly water). See also Transition risks.

Pre-industrial: The multi-century period prior to the onset of large-scale industrial activity around 1750. The reference period 1850–1900 is used to approximate pre-industrial global mean surface temperature.

Principles for Responsible Investment (PRI): Non-profit organisation which encourages investors to use responsible investment to enhance returns and better manage risks. It engages with global policymakers and is supported by, not but part of, the United Nations. It has six Principles for Responsible Investment that offer a menu of possible actions for incorporating ESG issues into investment practice.

Resilience: The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation.

Scope 1, 2, 3 emissions: Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

Stranded assets: Assets exposed to devaluations or conversion to “liabilities” because of unanticipated changes in their initially expected revenues due to innovations and/or evolutions of the business context, including changes in public regulations at the domestic and international levels.

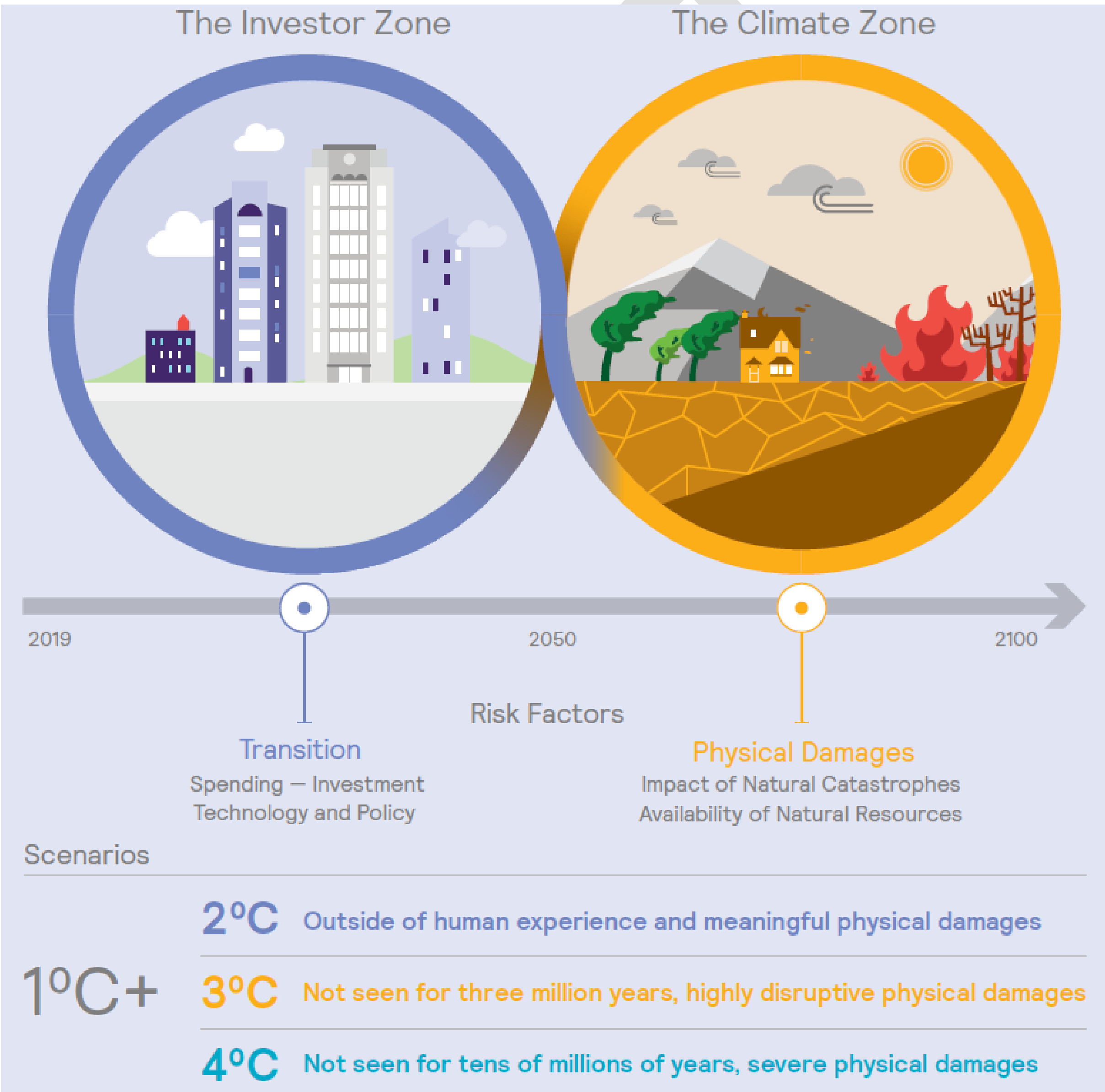
Task Force on Climate-related Financial Disclosures (TCFD): framework designed to improve and increase reporting of climate-related financial information

Taskforce on Nature-Related Financial Disclosures (TNFD): market-led, science-based TNFD framework enabling companies and financial institutions to integrate nature into decision making

Transition Alignment: the process of moving away from high-carbon intensive processes towards business models and assets aligned with a low carbon future and the Paris agreement. Different sectors will have different pathways to net zero.

Transition risks: Risks from policy changes, reputational impacts and shifts in market preferences, norms and technology as the economy moves to a low carbon approach. See also Physical risks.

Weighted average carbon intensity (WACI): The carbon intensity of a portfolio, weighted by the proportion of each constituent in the portfolio. Carbon intensity is calculated for each company as (Scope 1 and 2 carbon emissions / $m revenue). See also Carbon footprint.



Important Notices

Important notices from data providers

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