

Pensions Committee

2.00pm, Wednesday, 27 June 2018

Climate Change Risk and Carbon Footprinting

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Executive/routine	
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Executive Summary

Climate change concerns have prompted governments around the world to implement policies to limit global temperature increases. The Fund recognises that such policies will affect 'fossil fuel' companies in a significant way. However not all 'fossil fuels' are equal. Gas is much cleaner than coal - gas and renewables are expected to grow their share of the energy mix at the expense of coal. Many 'fossil fuel' companies are investing heavily in cleaner fuels and renewables – while they are part of the problem, they are also part of the solution.

Lothian Pension Fund's recent carbon footprint exercise provided useful information to the Investment Strategy Panel and the internal team aiding research, engagement and monitoring activity. Its footprint was almost identical to that of its benchmark. However, the data has limitations and needs to be interpreted with care.

The Fund's approach to being a responsible asset owner stems from its fiduciary duty to its members and employers. It incorporates environment, social and governance issues into the investment process – the Fund does disinvest from companies where it evaluates risk as being too high. The Fund also engages with companies to demand high standards of corporate governance and to protect and grow shareholder value. It believes that divestment of 'fossil fuels' as a policy will have little or no impact on company operations.

Climate Change Risk and Carbon Footprinting

1. Recommendations

Committee is requested to:

- 1.1 Note that the Fund has undertaken a carbon footprinting exercise which was considered by the Investment Strategy Panel in March 2018;
- 1.2 Reaffirm the Fund's commitment to integrate environmental, social and governance (ESG) considerations, such as carbon efficiency trends, into its decision-making;
- 1.3 Note that the Fund scrutinises and engages with investment managers to ensure that they are taking ESG issues, including climate change and carbon risk, into account in their investment decision-making;
- 1.4 Reaffirm the Fund's policy of not divesting solely on the grounds of non-financial factors;
- 1.5 Note that the Fund will monitor research on the link between ESG factors (including carbon-related factors) and financial performance to inform future investment strategy, such as stock selection criteria for quantitative strategies; and
- 1.6 Agree that the Fund should aim to influence engagement activity based on its shareholdings of companies that perform poorly on carbon efficiency measurements.

2. Background

- 2.1 Scientific concerns about the effects of greenhouse gas emissions on climate change culminated in the Paris Agreement in 2015, a coordinated action by governments around the world to implement climate change reduction measures. This poses a risk to companies, not least if they fail to take policy changes into account.
- 2.2 Environmental lobbyists are pressing for blanket 'divestment' of the shares of 'fossil fuel' companies by pension funds, including Lothian Pension Fund.
- 2.3 The Fund's policy on responsible investment stems from its fiduciary duty to its members and employers, which is clarified by a legal opinion on the responsibilities of Scottish Pension Funds previously reported to the Pensions Committee.
- 2.4 The Fund's Statement of Investment Principles describes its overarching approach to dealing with environmental, social and governance (ESG) issues. Consideration of ESG risks is integrated into the investment process as the Committee recognises that these can materially impact on financial risk and prospective returns. The Fund

believes that the shares of companies with improving ESG ratings are better investments than those that are simply highly rated.

- 2.5 Committee has previously recognised that ‘divestment’ means that any divested shares will instead be owned by other investors who may exercise little or no influence on the company’s operations. Simply replacing concerned investors, who use their votes to promote management of climate change risks, with other investors who may not have such concern, is not a credible strategy that incentivises corporate Boards and management positively.
- 2.6 The Fund has for many years embraced a policy of engagement, rather than one of mechanistic divestment, because it believes it is not only consistent with its fiduciary duty to members and employers, but it allows it to encourage responsible behaviour by company Boards and managements on ESG issues, including climate change.

3. Main report

Macro Environment

- 3.1 Financial risk for ‘fossil fuel’ companies will depend on the general outlook for energy consumption, on the economic incentives or disincentives created by policymakers and on the competitive positioning of companies.
- 3.2 On the assumption that the global economy will grow in the coming years, primary energy consumption will grow too. The market shares of energy sources will, however, change significantly.
- 3.3 The International Energy Agency and other forecasters believe that:
 - 3.3.1 Coal will lose significant market share and decline in absolute terms.
 - 3.3.2 Oil will also lose share, but demand growth for energy may mean that oil consumption will grow in absolute terms.
 - 3.3.3 Gas consumption will grow its market share and grow substantially in absolute terms.
- 3.4 If these forecasts are borne out, then a nuanced approach to understanding ‘fossil fuel’ companies is required.
- 3.5 As renewables grow their share of the energy market, the Fund expects to see a greater number of opportunities and significant corporate activity in what is a complex and enduring transition to a lower carbon world economy. The Fund expects that some of the companies that are currently large emitters of greenhouse gas emissions will reduce those emissions substantially, consistent with the aims of government policies, and become even bigger investors in the renewables sector. Meantime, some of today’s ‘fossil fuel’ companies will continue to deliver income for many years to come.

Carbon Footprinting

- 3.6 Recognising that there is a significant risk related to climate change from carbon reduction policies present and future, a carbon footprinting exercise of the Lothian Pension Fund's listed equity holdings using MSCI data has been carried out:
- 3.6.1 to aid analysis of the portfolio and identify key companies for further research on carbon risk exposures; and
 - 3.6.2 to help direct engagement activity with companies on carbon risk exposures.
- 3.7 The results were discussed at the Investment Strategy Panel meeting in March 2018 and they showed that the equity portfolio has a carbon footprint measure almost identical to its benchmark, which is the MSCI All Country World Index, a broad index of listed global equities.
- 3.8 The carbon footprint exercise generated useful insights. The major positives are that it:
- 3.8.1 enables users to drill down to stock level allowing company level comparisons of carbon exposures; and
 - 3.8.2 enables users to undertake analysis on carbon efficiency trends.
- This implies that, by tracking changes in measures such as carbon efficiency and, shareholder risk can be mitigated and returns enhanced.
- 3.9 The exercise also confirms that there is no substitute for undertaking detailed analysis, rather than relying on a single measure of carbon emissions to direct policy. Data collection in this area is in its infancy and although it will doubtless improve with time, it is important to note its current limitations. Appendix 1 describes how the carbon emissions are measured and reported. In summary:
- 3.9.1 The data used in the footprint uses estimation techniques as data is not always available.
 - 3.9.2 The data itself is far from perfect and sometimes quite old.
 - 3.9.3 Assumptions are made about what to include in scope of both carbon and companies. For example, under carbon "scope 1 and 2", oil companies are not assumed to be responsible for the carbon created when their customers use their fuel.
 - 3.9.4 Assumptions around carbon footprinting tend to put all responsibility for carbon emissions onto the equity holders of the business, therefore banks and other companies that invest in carbon production through debt, rather than equity, are not assumed to be responsible for the carbon this creates.
 - 3.9.5 The analysis excludes carbon emissions from companies in the private markets.
- 3.10 The result is that a carbon footprint, taken in isolation, says little about the risk of a portfolio. As such, it is a blunt instrument and largely unhelpful in formulating policy decisions as the raw output can easily be over- or understated. Not all data is intuitive. The Task Force on Climate-related Financial Disclosures and other

initiatives are actively trying to address the issues around reporting and undoubtedly it will improve over time.

- 3.11 It is also important to note that the carbon footprint has no bearing on the central carbon-related issue around the financial risk of so-called 'stranded assets'.
- 3.12 With those caveats, the Lothian Pension Fund listed equity portfolio's carbon footprint was estimated to be broadly in line with that of its benchmark index, the MSCI All Country World Index. See Appendix 2 for explanation of metrics.

MSCI ESG Carbon Footprint Calculator	01/09/2017	
	Carbon Emissions tons CO2e/ \$M invested	Carbon Intensity tons CO2e/\$M Sales
Lothian Listed Equities	152	244
MSCI All Country Index	149	241

Source: MSCI ESG

- 3.13 The portfolio's weights in the various sectors and in individual stocks combine to create the carbon footprint. Compared with the benchmark index, the Fund's listed equity portfolio has a higher allocation to the traditionally carbon- intensive Utilities sector, a lower allocation to the Energy sector and a higher allocation to the Industrials sector, which comprises an eclectic group of companies with vastly different carbon efficiencies.
- 3.14 The greater than benchmark allocation to the Utilities sector reflects the Fund's strategy with its focus on income generation and lower than benchmark volatility. The Utilities sector typically generates more income and less growth than other sectors. Although this exposure to a sector that is more carbon-intensive than the benchmark increases the Fund's carbon footprint, it is notable that within the Utilities sector the Fund is less carbon-intensive than the benchmark. In fact, for the three carbon intensive sectors mentioned, Utilities, Energy and Industrials, the carbon intensity of the portfolio is proportionally lower than that of the benchmark index.

Outcomes from the Carbon Footprinting

- 3.15 Notwithstanding the existing research and engagement undertaken by the internal team, Hermes and LAPFF, the analysis has allowed the Fund to drill down to a stock level and compare companies across various metrics. This analysis:
 - 3.15.1 has provided additional insight for the internal portfolio managers in their research of companies and prompted the team to have discussion with individual companies on their carbon emissions;
 - 3.15.2 will facilitate discussion with external portfolio managers on their consideration of climate change risk in their decision making;
 - 3.15.3 has prompted discussion with Hermes EOS where there are concerns on specific companies to progress engagements.
- 3.16 Examples of how this has worked are provided in Appendix 3.

- 3.17 Investment Strategy Panel recommend the following:
- 3.17.1 That the Funds commit to monitoring carbon efficiency trends to support integration of carbon analysis into its fundamental analysis and risk assessment of listed equities.
 - 3.17.2 That the Funds influence engagement activity based on their shareholdings of companies that perform particularly poorly on carbon efficiency measurements.
 - 3.17.3 That the Funds commit to scrutinising managers to ensure they understand how company strategy on climate change and carbon risk is taken into account.
 - 3.17.4 That there should be no explicit change to the stock selection criteria of the quantitative portfolios to include ESG (including carbon factors) due to the lack of long term data and evidence that it is possible to improve risk-adjusted returns by doing so.
 - 3.17.5 That the investment team should continue to monitor research on the link between carbon (and other ESG) data and financial performance to determine whether any such factors can be incorporated to benefit the Funds.

Other Investments within the Lothian Pension Fund

- 3.18 While the carbon footprinting has been undertaken on the Fund's listed equities, it is worth highlighting that the Fund has been researching opportunities and investing in the renewable sector in the private market for several years. Through its private market activities, the Fund owns renewables, including wind, solar and hydro assets, valued at £113m at 31 March 2018.

4. Measures of success

- 4.1 Success of the Fund's investments will affect its ability to pay pensions as they fall due over the long term.
- 4.2 Engagement with companies is very difficult to measure as engagements can require considerable patience, but this is in line with the Fund's investment horizon. The Fund's approach is essentially qualitative and is wide ranging. While the impact is very difficult to quantify, the California Public Employees' Retirement System (CalPERS), the largest public pension fund in the US, states that the companies it targeted for engagement activity (approximately 188 of them since 1987) have outperformed an appropriate benchmark by a large amount over the five years after engagement was initiated. This has become known as the "CalPERS Effect".
- 4.3 The Fund is a signatory to PRI and completes the annual self-assessment process which compares the Fund's ESG activities with those of peers.

5. Financial impact

- 5.1 There is no financial impact as a result of this report. The costs of the Fund's research and engagement activities are included in its budget.

6. Risk, policy, compliance and governance impact

- 6.1 The engagement activity of the Fund complies with the Statement of Investment Principles. The Fund's policy is to take environmental, social and governance issues seriously and where appropriate to act upon them in a manner which is consistent with the paramount fiduciary duty to provide the highest standards of stewardship on behalf of the members and employers. The Fund's policy of being a responsible, informed and involved asset owner is expected to reduce risk.

7. Equalities impact

- 7.1 There is no equalities impact as a result of this paper. The Fund's engagement activity does tackle equalities issues, and it is expected to have a positive impact and contribute to the sustainability of the Funds' investments.

8. Sustainability impact

- 8.1 The paper deals directly with issues that affect the sustainability of the Fund's investments, notably those related to climate change and carbon risk. By undertaking analysis on the impact of climate change reduction policies and acting upon the findings, the Fund expects to mitigate risk and so make the Fund more sustainable.

9. Consultation and engagement

- 9.1 The Pension Board, comprising employer and member representatives, is integral to the governance of the Fund and they are invited to comment on the relevant matters at Committee meetings.

10. Background reading/external references

- 10.1 "Report on legal duties of LGPS Pensions Committees in relation to the investment of LGPS Funds" – legal opinion on fiduciary duty
http://lgpsab.scot/wp-content/uploads/2016/06/Report-National-Scheme-Advisory-Board-v4-updated-23_2_16.pdf
- 10.2 The CalPERS Effect

<https://www.calpers.ca.gov/page/newsroom/calpers-news/2014/company-performance>

- 10.3 Lothian Pension Fund: Statement of Investment Principles
http://www.lpf.org.uk/info/70/statement_of_investment_principles
- 10.4 Lothian Pension Fund: Responsible Investment
http://www.lpf.org.uk/info/68/responsible_investment
- 10.5 World Energy Outlook 2017, International Energy Agency
<https://www.iea.org/weo2017/>
- 10.6 Task Force on Climate-related Financial Disclosures
<https://www.fsb-tcfd.org/>
- 10.7 Financial Times: Bank of England urged to act on lenders' climate change risks (22 May 2018)
<https://www.ft.com/content/b050c6ea-5cfc-11e8-ad91-e01af256df68>

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11. Appendices

Appendix 1 – Carbon Emission Metrics

Appendix 2 – Carbon Footprint

Appendix 3 – Case studies

Carbon Emission Metrics

The amount of Carbon Emissions can be estimated in 3 ways under the classifications of the Greenhouse Gas Protocol. MSCI's explanation of the 3 'scopes' is shown below.

BACKGROUND ON GREENHOUSE GAS EMISSIONS

Greenhouse gas emissions are classified as per the Greenhouse Gas Protocol (GHG Protocol) and are grouped in three categories known as Scope 1, Scope 2 and Scope 3.

- **Scope 1** GHG emissions are those directly occurring "from sources that are owned or controlled by the institution, including: on-campus stationary combustion of fossil fuels; mobile combustion of fossil fuels by institution owned/controlled vehicles; and "fugitive" emissions. Fugitive emissions result from intentional or unintentional releases of GHGs, including the leakage of hydrofluorocarbons (HFCs) from refrigeration and air conditioning equipment as well as the release of methane (CH₄) from institution-owned farm animals."
- **Scope 2** emissions are "indirect emissions generated in the production of electricity consumed by the institution."
- **Scope 3** emissions are all the other indirect emissions that are "a consequence of the activities of the institution, but occur from sources not owned or controlled by the institution" such as commuting; waste disposal; embodied emissions from extraction, production, and transportation of purchased goods; outsourced activities; contractor-owned vehicles; and line loss from electricity transmission and distribution".

The greenhouse gases included in the GHG Protocol are the six gases mentioned in the Kyoto Protocol¹, given here on the next page with their global warming potential coefficient (GWP):

¹ United Nations Framework Convention on Climate Change (see http://unfccc.int/kyoto_protocol/items/3145.php)

Exhibit 1: Kyoto Greenhouse Gases

Greenhouse Gas	Global Warming Potential
Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous Oxide (N ₂ O)	310
Hydrofluorocarbons (HFCs)	150-11,700
Perfluorocarbons (PFCs)	6,500 – 9,200
Sulphur hexafluoride (SF ₆)	23,900

CARBON EMISSIONS ESTIMATION MODELS

We estimate direct and indirect emissions (Scope 1 and Scope 2). While we do report Scope 3 emissions where available, currently we do not estimate it because the definitions of what emissions should or should not be included in Scope 3 are not well defined or consistently calculated by companies. Also, these emissions are not fully within the company's control.

MSCI states that Scope 3 emissions are not well defined, are not consistently calculated and are not within a company's control. It collects Scope 3 data where they are available, but it excludes Scope 3 indirect emissions from its analysis. MSCI, therefore, uses the available Scope 1 and Scope 2 data and estimates Scope 1 and Scope 2 data when they are not reported.

Data Interpretation

As well as sometimes being estimates, Scope 1 and 2 emissions data also suffers from a double-counting issue. Both the generator **and** the user of electricity are held responsible for the carbon emissions from generation, meaning that the simple metric, measurement of emissions, does not properly measure the actual carbon footprint.

The exclusion of Scope 3 emissions (driven by lack of reliable data), however, produces much more counter-intuitive results. For example, car manufacturers and oil producers appear to have relatively low carbon footprints.

The carbon emissions of car manufacturers are those produced during the manufacturing process, not those produced when their cars are consuming fuel on the road. Likewise, the carbon emissions of oil companies are those produced during the extraction process, not those produced when the final customers burn the fuels.

To illustrate this surprising situation, take the example of oil and gas exploration company, ONEOK, which reported last year that the total carbon emissions created by its fossil fuel production annually was around 65 million tonnes. However, the emissions used to calculate the carbon footprint exclude fuel not burned by ONEOK. By only including scope 1 and 2 emissions, its carbon footprint is reduced by the 63 million tonnes burned by its customers to just 3% of the amount identified by the company.

This example highlights that the carbon measures utilised to estimate the footprint provide no useful information about a company's carbon reserves in the ground. As such, **the carbon footprint has no bearing on the central carbon-related issue around the financial risk of so-called "stranded assets"**.

Another shortcoming of the data relates to banks and financial companies. Banks/financials may make direct, primary investments in companies that are large emitters of greenhouse gases. They do not have to report the carbon emissions of the companies in which they invest or to which they lend money. Banks/financials only report the carbon that they themselves use and this is likely to be minimal. So, their reported carbon footprint will be very low.

It is an issue that undermines carbon footprint results. Any pension fund with an allocation to banks that is higher than that in the benchmark could report a lower than benchmark carbon footprint, simply because banks disclose inadequate information about their loan books. These banks could be the source of finance (actual cash flow) for companies expanding dirty carbon production and/or exposed

to serious climate-related risks. It is worth noting that the secondary investment in company shares made by pension funds generally involves no cash flow going to the companies. The investment simply results in a transfer of ownership of existing shares.

MSCI, Trucost and other carbon measurement agents are not able to account for this issue, which distorts the results. It is an issue that has received recent press coverage with activist investors pressing the Governor of the Bank of England to mandate greater disclosures.

Meantime, not only are banks and financials excluded from the picture, but the significant proportion of the corporate sector financed by anything other than listed shares - bank debt, bonds, private equity, family holdings and so on are excluded. This clearly makes the coverage 'patchy' at best.

It is also interesting to note the corporate activity where listed companies are selling carbon-intensive businesses to leverage-financed private equity. An example of this is the exit of listed company Rio from the coal industry in March 2018 with the sale of its stake in Australian coal mining to EMR Capital: "a resources private equity manager with a proven track record in resources operation and investment". EMR stated when it bought the assets it that believes "coal ... offers excellent demand and supply fundamentals for decades into the future". These transactions reduce rather than increase transparency of carbon emissions data.

The data and methodology used by the carbon measurement agents will undoubtedly improve over time, but currently, it does appear that there are serious flaws.

Carbon Footprint

The MSCI ESG Carbon Footprint Calculator draws on company data and its estimates and calculates statistics that represent a portfolio's carbon footprint. There is no single method of doing this. Two popular measures, Carbon Emissions / \$M Invested and Carbon Intensity (or Carbon Emissions / \$M Sales), are shown in the table below for Lothian Pension Fund and its benchmark, the MSCI All Country Index, with a short description.

MSCI ESG Carbon Footprint Calculator		
	Carbon Emissions tons CO₂e/ \$M invested	Carbon Intensity tons CO₂e/\$M Sales
Lothian Listed Equities	152	244
MSCI All Country Index	149	241
Purpose	What is the portfolio's normalised carbon footprint per \$M invested	How efficient is the portfolio in terms of carbon emissions per \$M of revenue generated
Explanation	Measure of portfolio's contribution to climate change - allows comparison with a benchmark	The metric adjusts for company size and is a more accurate measure of the efficiency of revenue than the total footprint

Carbon emissions (tons of carbon dioxide (CO₂) equivalent per million dollars invested) is a straightforward calculation of the emissions associated with the amount invested.

Carbon Intensity (tons of carbon dioxide (CO₂) equivalent per million dollars of sales) measures the efficiency of a portfolio in terms of carbon emissions per amount of revenue generated. Using this metric, it is claimed that companies in similar fields with similar business models can be compared and the data used for portfolio management and engagement activity.

The discussion above makes it clear that the output of the carbon footprinting is presented with a 'health warning'. The idea that a portfolio with higher than benchmark carbon intensity is 'bad' and is exposed to higher risks than a portfolio with lower than benchmark carbon intensity is superficial at best.

Case Studies

Although the Fund does not believe that the carbon footprint itself is a useful indicator, it does believe that MSCI ESG research and its database are useful tools. They are important inputs for the Fund enabling it to monitor carbon emissions and carbon trends both at a stock level and a sector level. This knowledge leads to research and engagement activity. The examples below shed light on the usefulness of the data and are taken from work on the Utilities sector, mentioned above as one of the most carbon-intensive sectors.

Fortum Oyj, the Finnish utility, generates 63% of its power generation from low carbon sources, and 96% of EU operations are low carbon. The company aims to expand its renewables and nuclear portfolio, while developing localised utility sources, such as waste to energy and biomass production. Fortum recently launched a takeover bid for German utility, Uniper. If successful, Fortum's carbon-based production within the EU would be considerably increased. This unexpected development prompted engagement action by the Fund.

The Fund contacted the company directly to discuss the transaction. Fortum's management fully anticipates that carbon intensive coal and lignite production will be priced out of the EU market within the next 2-5 years. The bid is premised on management's estimation of the value in Uniper's non-carbon-based (nuclear and hydro) assets. Following this engagement, the internal portfolio manager decided to retain the shares in Fortum.

Great Plains Energy, an electric utility based in Kansas City, was also identified as one of the highest emitters in the portfolio. MSCI ESG report that it derives 80% of generating capacity from coal power stations, with only 2% coming from renewable sources. The company also operates nuclear plants, but lacks effective strategies to reduce toxic emissions and water consumption. As the company is rated CCC, putting it in the bottom 5% of its peer group and it has neither a formal climate change policy nor a specific greenhouse gas emissions reduction target, the Fund investigated the position with Hermes EOS who are already engaging with the company to increase disclosure and on corporate strategy.

CLP Holdings was identified as one of the highest emitters of greenhouse gases in the portfolio. It generates electricity predominantly in Hong Kong, India and China. With a current capacity of 18,622 megawatts, its fuel mix is 62% oil and coal, 18% gas, 4% nuclear and 16% renewables. The governments in CLP's main markets are pushing renewables strongly, and CLP aims to increase renewables to 20% of production by 2020. CLP has also targeted to reduce greenhouse gas intensity per unit of power generated in 2020 to 30% below 2007 levels. There is clearly regulatory risk but management are making progress towards lower carbon intensity. The company was recently upgraded to 'AA' by MSCI's ESG (a positive signal), putting it in the top 23% of its peer group.