Introduction
In May 2015, the French government announced a law to make it mandatory for listed companies and institutional investors to report on the financial risks posed by climate change and the measures adopted by institutions to reduce those risks. Specifically, it requires institutions to disclose the carbon footprint of their portfolios on an annual basis.1 This reflects the growing international focus on how institutional investors address the risks associated with climate change.

At the time of writing, The Financial Stability Board (FSB) has just published a proposal to the G20 for the creation of an industry-led disclosure task force on climate-related risks to make it easier for investors to compare the carbon intensity of different assets by setting up a voluntary standard for carbon disclosure. The Governor of the Bank of England, Mark Carney said that information about companies’ carbon footprints would give investors a better idea of potential risks at a time when scientific evidence was showing that eventually, “climate change will threaten financial resilience and longer term prosperity...While there is still time to act, the window of opportunity is finite and shrinking.”2

Climate change and efforts to mitigate the associated risks, will affect investment returns in many ways that are difficult to predict. There are significant reasons to believe that investors have underestimated the importance of the financial risks posed by climate change. A recent report by the Economist Intelligence Unit claims that to date, few asset managers have measured climate risks in their portfolios, let alone tried to mitigate them. This could represent a clear breach of their fiduciary duties to beneficiaries. According to estimates by the Asset Owners’ Disclosure Project (AODP) only 7% of asset owners have calculated the carbon footprint of their portfolio and only 1.4% have an explicit target to reduce it.3

One well known method for tackling climate change involves putting a price on carbon. It is crucial that investors are aware of the issues surrounding the cost of carbon, and find ways to manage exposure to carbon risk.

This briefing will demonstrate that:
• Carbon prices will have to rise significantly to be effective;
• Pension fund exposure to this cost is often unknown and could be significant;
• Carbon footprints of similar styled investment portfolios can vary by over 700%;
• Practical and cost-effective steps to measure and manage this risk are available.

Aside from the issue of carbon pricing, measuring the carbon content of a portfolio also enables investors to quantify the areas of a portfolio which are vulnerable to the different risk factors associated with climate change. Mercer’s 2015 report ‘Investing in a Time of Climate Change’ specifically identifies four risk factors and four scenarios. It has developed an investment model with quantified representation of future pathways for each risk factor under each of the four scenarios and relative impacts over time, showing sensitivity to each risk factor for different asset classes.
and industry sectors.
A key point made in the Mercer report is that risk to portfolios from climate change is complex and has multiple dimensions involving long term measurement with risk metrics such as sea level rises, carbon price developments, and low carbon investment flows outside average investors’ range of knowledge and expertise. Climate risk deserves more attention on the investment agenda and needs a new set of specific tools to measure it. One of the starting points is to measure the carbon footprint of a portfolio.

**Background**
Global governments have recognised that reductions in CO2 emissions are crucial to securing a stable climate. To date over 40 governments have introduced a cost of carbon, including the US and China, the world’s two largest CO2 emitters.

Broadly, global emissions would have to fall by about 60% by 2050 to limit the increase in average temperature to 2°C (3.6°F) above pre-industrial levels. Over the last 40 years, CO2 emissions have continually risen or remained flat, falling only following major economic crises. Add to this a global population that is projected to grow to 9.6bn by 2050 and that target looks increasingly unrealistic. The International Energy Agency, among others, has stated that the world is on course for average temperature rises of at least 4°C, not the 2°C targeted by policy makers. Correcting this gap would almost certainly involve a much tougher regulatory framework with a strong pricing signal at its core.

Carbon pricing through a carbon tax or cap-and-trade system is based on the internationally accepted “polluter-pays principle”, where companies face the full environmental costs of their actions. The COP21 climate conference in Paris in December 2015 will be another step in the process. And while the negotiations are unlikely to achieve a global carbon price, further carbon pricing will almost certainly result from national or regional policies that will be encouraged by the agreement.

In the UK, the Bank of England’s Prudential Regulation Authority (PRA) established a project team to lead on the exploration of climate risks in the financial system. The report was delivered in September 2015 and the PRA is currently following up with a selection of regulated firms in November to consider further the risks identified in the report. This report will inform the next UK Climate Change Risk Assessment, to be laid before Parliament in 2017.

However, this is not a “future risk”. Legislation and policy announcements have already been seen to have significant financial impact. The week following Chancellor George Osborne’s 2011 Budget announcement of a carbon floor price, shares in Drax fell by 11%. The company also saw its share price lose 25% following the Budget earlier this year during which George Osborne announced the removal of the climate change levy exemption for renewable energy companies.

**Risks to investors**
The current response to carbon cost risks from the fund management industry is extremely varied and attention to environmental risk continues to be a concern for institutional investors including pension funds. Without accurate measurement of these risks, investors will struggle to manage them effectively.

Earlier in 2015, a group of sixteen UK pension funds with assets of over £200 billion published “A Guide to Responsible Investment Reporting in Public Equity”. The pension funds argue that better reporting of Environmental, Social and Governance
(ESG) data and stewardship activities in public equities could help determine the extent to which these factors contribute to long-term risk adjusted returns. Carbon footprinting is suggested as a method to help identify environmental risk and opportunity.

The carbon footprint is an analysis of the greenhouse gas (GHG) emissions embedded within the portfolio. For Trucost this is achieved by carrying out a carbon footprint for each individual holding encapsulating both direct and first tier indirect impacts. Direct emissions, referred to as Scope 1 in the Greenhouse gas Protocol, result from a company’s own operations and include GHG emissions from boilers and company owned vehicles, emissions from any manufacturing operations and waste produced. First tier indirect impacts (also termed supply chain impacts) occur because of the goods or services a company procures. This includes purchased electricity, referred to as Scope 2, but also for Trucost includes important elements such as business travel and logistics (Scope 3 emissions). Other companies such as Carbon Trust and Credit360 may include Scope 3 emissions which incorporate all upstream and downstream emissions as well. The carbon footprints of portfolios, expressed in tonnes of carbon dioxide equivalent (CO2e) provide a comparable measure of emissions associated with holdings and provide a useful indicator for related exposure to carbon costs.

In 2009, Trucost analysed the GHG emissions and potential carbon costs associated with UK-based equity funds with holdings and valued these at over £206 billion, in 2,380 companies, invested in by 118 equity portfolios. The underlying holdings data represents the holdings from UK-based institutional equity portfolios researched by Mercer and in which institutional investors, including pension funds, invest.

The carbon footprints of the funds varied dramatically. The smallest footprint was 209 tonnes CO2e per £ million invested; the largest was 1,487 tonnes CO2e/£ million, meaning the largest was over seven times more exposed to potential carbon costs than the smallest - yet both these funds had the same “value” investment style.

A typical reason for the large carbon footprints of the funds at the bottom of the ranking was the allocation of a higher proportion of assets to carbon-intensive sectors such as utilities. More interestingly, another major factor was the selection of carbon-intensive companies for their sectors. In the oil and gas, food and beverage and travel and leisure sectors, the portfolios with larger carbon footprints selected significantly more carbon-intensive stocks than those held in the top ranked portfolios. In some cases, stock selection decisions were driving the relative carbon performance of individual portfolios more than sector allocations.

Mercer interviewed the managers of the investment portfolios with the smallest and largest carbon footprints to find out whether their decision-making was influenced by carbon risk factors. The fund manager of the portfolio with the smallest footprint believed that climate change had no relevance for the way the team thought about companies and was unlikely to be of importance to the fund as it didn’t own capital-intensive companies.

The fund manager for the portfolio with the largest footprint fund noted that “environmental damage might be an indication of a better managed company”, meaning that the company may have considered the environmental costs and decided the benefits of pollution (despite possible fines from breaking environmental regulations) outweighed the costs from a financial perspective.
Climate change risk is therefore an issue that pension funds trustees need to ensure is assessed and actively managed. Carbon pricing in particular is a clear risk to portfolio returns that can be quantified and managed. Trustees can be sure that in so doing they will be helping to meet their fiduciary duty. Moreover, the UK Law Commission’s Report on the fiduciary duties of investment intermediaries found that consideration of environmental factors by pension fund trustees is entirely consistent with their fiduciary duty to beneficiaries if they represent a financial risk. Trustees may also consider such decisions on ethical grounds, provided there is not significant financial detriment to the fund by doing so.8

**Recommendations for investors**

**Portfolio Audits and Carbon Footprinting**

Investors should consider using the tools currently available to measure and manage the carbon intensity of investments and investment portfolios.

Trucost launched the use of Portfolio Audits over a decade ago as a tool for managing and communicating the environmental footprints and benefits of investment funds. It is possible to analyse different asset classes such as listed equities, corporate fixed income, infrastructure, private equity, forestry and farmland and a range of carbon and climate change risks such as the fund’s embedded carbon risk from fossil fuel reserves.

Other providers including Bloomberg, yourSRI.com, South Pole Carbon and EIRIS also offer carbon footprinting services.

**Key benefits of carbon footprinting for investors**

- Understand how your fund exposure compares to investment benchmarks.
- Monitor portfolios on greenhouse gas emissions and related exposure to carbon costs under existing and planned regulatory frameworks.
- Develop processes to proactively manage emissions-related risks and opportunities in portfolios to better protect your beneficiaries’ long-term savings.
- Integrate climate change criteria such as carbon performance into financial analysis, stock selection decisions and active ownership practices.

The Environment Agency Pension Fund (EAPF) has published its combined active equity funds carbon footprint since 2008. Over the five years since 2008 the carbon footprint of the EAPF combined equity portfolio decreased by 44% - see Figure 1.9 The subsequent increase during 2013 reflects adjustments in investment strategies.

Recently EAPF trustees made a decision to align the fund’s portfolio with a maximum rise in global temperature of two degrees. Part of this strategy involves decarbonising the equity portfolio and reducing exposure to “future emissions”* by 90 per cent for coal and 50 per cent for oil and gas by 2020 compared to the exposure in their underlying benchmark as at 31 March 2015. This is part of a cohesive plan to deliver strong long term financial returns as the impacts of climate change increasingly materialise. In their policy announcement in October 2015 they declared: “We believe financial risk and opportunities will come from the physical impacts, regulation and policy alongside increased competition from alternatives and technological innovation.”
A lower carbon footprint is expected to have inherent advantages as climate change policy develops, but the important benefit is that investment decisions are made and positions held based on accurate knowledge of funds’ exposure to carbon costs.

*Future emissions* refers to the amount of greenhouse gases that would be emitted should these reserves be extracted and ultimately burnt, expressed in tonnes of carbon dioxide equivalent.

**Low carbon indices - a better benchmark for passive funds**

The above recommendations are for actively managed funds. For passively managed funds, there are a range of new products which track low carbon indices, as a method for managing carbon risk.

Standard and Poor’s, FTSE and MSCI have all introduced low carbon versions of well-known benchmarks. The S&P Carbon Efficient family include the US index which closely tracks the performance of the S&P 500® while significantly reducing the carbon footprint of the overall portfolio. It has a track record over six years of delivering benchmark returns but with around 50% less exposure to potential carbon emission risks.

In the UK, the BT Pension Fund has invested in a carbon optimised version of the FTSE All-Share provided by Legal & General Investment Management. The fund performance is given below.

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<th>LGIM UK Equity Carbon Opt Fund Performance (%) Total Return GBP*</th>
<th>All-Share Carbon Opt Index Performance (%) Total Return GBP</th>
<th>All-Share Index Performance (%) Total Return GBP</th>
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<tbody>
<tr>
<td>Q1 2015</td>
<td>4.73</td>
<td>4.69</td>
<td>4.67</td>
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<td>2014</td>
<td>1.31</td>
<td>1.25</td>
<td>1.18</td>
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<tr>
<td>2013</td>
<td>21.13</td>
<td>21.09</td>
<td>20.81</td>
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<tr>
<td>2012</td>
<td>12.63</td>
<td>12.58</td>
<td>12.30</td>
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<td>Since inception</td>
<td>34.14</td>
<td>33.90</td>
<td>33.15</td>
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*Inception date 3rd May 2011
Recommendations for pension funds
Pension fund trustees should signal to fund managers and consultants their interest in understanding the carbon exposure and risks in their portfolios. Any analysis should incorporate a quantitative element. Without these explicit requests, it is unlikely that fund managers and consultants will provide clients with information about such risks.

Questions for pension fund trustees to ask fund managers and investment consultants:
• What approach do you have for understanding carbon risk in the investment process?
• Which asset classes are considered?
• How is this risk to be measured and managed?
• How does my fund exposure compare to investment benchmarks?
• Would you consider signing up to the Montreal Pledge whereby there is a commitment to measure and publicly disclose the carbon footprint of investment portfolios on an annual basis?

Learn more about Carbon Footprinting at http://www.trucost.com/portfolio-audits

Learn more about ShareAction’s Green Light Project which aims to assist pension funds by providing guidance on the financial implications of climate change and the associated risks and opportunities: http://www.shareaction.org/greenlightreport

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About ShareAction
ShareAction (Fairshare Educational Foundation) is a registered charity that promotes responsible investment practices by pension providers and fund managers. ShareAction believes that responsible investment helps to safeguard investments as well as securing environmental and social benefits.

About Trucost
Trucost has been helping companies, investors, governments, academics and thought leaders to understand the economic consequences of natural capital dependency for over 15 years. Our world leading data and insight enables our clients to identify natural capital dependency across companies, products, supply chains and investments; manage risk from volatile commodity prices and increasing environmental costs; and ultimately build more sustainable business models and brands.
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