



Institute
and Faculty
of Actuaries

Climate Risk: A Practical Guide for Actuaries working in Defined Contribution Pensions

by the Defined Contribution working group of the Resource
and Environment Board

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Contents

Introduction.....	3
1. Climate risk overview	4
2. Relevance for defined contribution arrangements	5
3. Regulatory context.....	6
4. Climate change risks and member outcomes.....	7
5. Case studies – HSBC Bank (UK) Pension Scheme & NEST	11
6. Take away actions for DC pensions actuaries.....	14
Appendix A – UK-specific DC pension regulation and guidance which is relevant to climate risk	16
Appendix B – Global Capital Market Initiatives Linked to Climate Change.....	19

Introduction

In May 2017, the Institute and Faculty of Actuaries ('IFOA') issued a Risk Alert¹ on Climate-Related Risks. This stated that:

“Actuaries should ensure that they understand, and are clear in communicating, the extent to which they have taken account of climate-related risks in any relevant decisions, calculations or advice.”

Following publication of the Risk Alert, the IFOA's Resource and Environment ('R&E') Board is seeking to support members by producing a series of practical guides on climate risk for different practice areas to raise awareness of the topic, encourage discussion, catalyse further research and help actuaries to think about how to develop their advice.

This guide has been produced to support actuaries advising UK defined contribution pension schemes (trust, contract and master trust), although some of the material may also be relevant for actuaries advising other types of pension schemes and in other jurisdictions. It explains how climate risks may be relevant to defined contribution pension arrangements and is designed to support actuaries and others working in defined contribution pensions in exercising their judgement in this area.

Although this guide is focused on climate change in the context of DC pensions, other R&E issues are also relevant. Other publications² have examined how wider R&E risks could significantly limit future economic growth and these wider risks should also be considered by those advising on DC arrangements.

The guide contains the following sections:

- Section 1 – Climate risk overview
Summarises the current level of global warming, the high level of risk associated with climate change and the wide range of possible outcomes.
- Section 2 – Relevance for defined contribution arrangements
Describes why climate change is relevant for defined contribution pensions.
- Section 3 – Regulatory context
highlights some pertinent UK DC Pensions regulations and guidance, relevant to the topic.
- Section 4 – Climate change risks and member outcomes
Describes how the three risk types highlighted in the IFOA risk alert could be relevant for DC pensions, through capital market volatility and impact on investment returns, longer term impact on member outcomes and professional liability.
- Section 5 – Case studies
Case studies of two DC schemes which have recently implemented climate aware default investment strategies, HSBC Bank (UK) Pension Scheme and NEST.
- Section 6 – Take away actions for DC pensions actuaries
Suggested actions for DC pensions actuaries to consider.
- Appendix A – UK specific DC pension regulation and guidance which is relevant to climate risk
- Appendix B - Global Capital Market Initiatives Linked to Climate Change

Please note this document does not have the status of non-mandatory guidance for regulatory purposes³

¹ IFOA Climate Risk Alert <https://www.actuaries.org.uk/news-and-insights/media-centre/media-releases-and-statements/ifo-warns-climate-change-financial-risks>

² “Resource Constraints: sharing a finite world. Implications of Limits to Growth for the Actuarial Profession.” (IFOA, 2013)

³ Please refer to <https://www.actuaries.org.uk/about-us/governance-and-structure/other-boards-and-committees/regulation-board>

1. Climate risk overview

There is scientific consensus that warming of the climate is “unequivocal” and that human activities, particularly greenhouse gas (GHG) emissions, are “extremely likely to have been the dominant cause of the observed warming since the mid-20th century”⁴. GHG include carbon dioxide, methane and nitrous oxide, and are emitted by burning fossil fuels (to generate heat, electricity and for transport), livestock farming and deforestation.⁵

Hansen’s July 2017 paper “Young people’s burden: requirement of negative CO₂ emissions”⁶ outlined the risks associated with climate change, for example, estimating that an ultimate sea level rise of between 6 to 9 metres is consistent with 2016 levels of warming. The environmental impacts of further warming on the natural systems that support our civilisation and underpin all our economic activity could be catastrophic. However, some of the impacts of climate change, such as sea level rise, will take time to emerge, giving our civilisation a window of opportunity to mitigate these risks.

For further detail on the potential physical impacts of climate change, we direct readers to the forthcoming paper from the IFoA Climate Change Working Party or “Climate Change: Implications for Investors and Financial Institutions”⁷. However, the warning from the latest IPCC assessment report is stark:

“Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks”⁸.

Mitigation refers to human efforts to reduce the drivers of climate change by reducing emissions or increasing natural carbon sinks whereas adaptation refers to adjustments to natural or human systems in response to actual or expected climatic change and effects.

It is clear that both adaptation and mitigation are necessary to manage climate risks. With no mitigation, the climate will change so much that no adaptation measures will be sufficient to maintain our society. Even if stringent mitigation measures are applied immediately, global average temperatures are expected to continue to rise for some years, so some adaptation measures will be necessary.

Future outcomes can therefore be considered along a spectrum, although where will we end up on the spectrum between rapid transformation of our energy system (with associated transition risks) and significant climate change (with associated physical risks) is unclear. This is partly because of the unknowable human response to climate change and partly because of the complexity of the climate system itself, including the existence of “tipping points” beyond which we will experience non-linear and irreversible changes in the climate.

It is clear there will be significant change which brings with it risks and opportunities for both the financial system and the work of actuaries.

⁴ IPCC Climate Change 2014 Synthesis Report https://www.ipcc.ch/news_and_events/docs/ar5/ar5_syr_headlines_en.pdf. The IPCC define “extremely likely” as more than 95% probability. https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch1s1-6.html

⁵ IFoA Resource & Environment Board Working Party 2017 covenant report “Supplementary Information on Resource and Environment Issues and their Implications for Sponsor Covenant Assessments”

⁶ Young people’s burden: requirement of negative CO₂ emissions
<https://www.earth-syst-dynam.net/8/577/2017/>

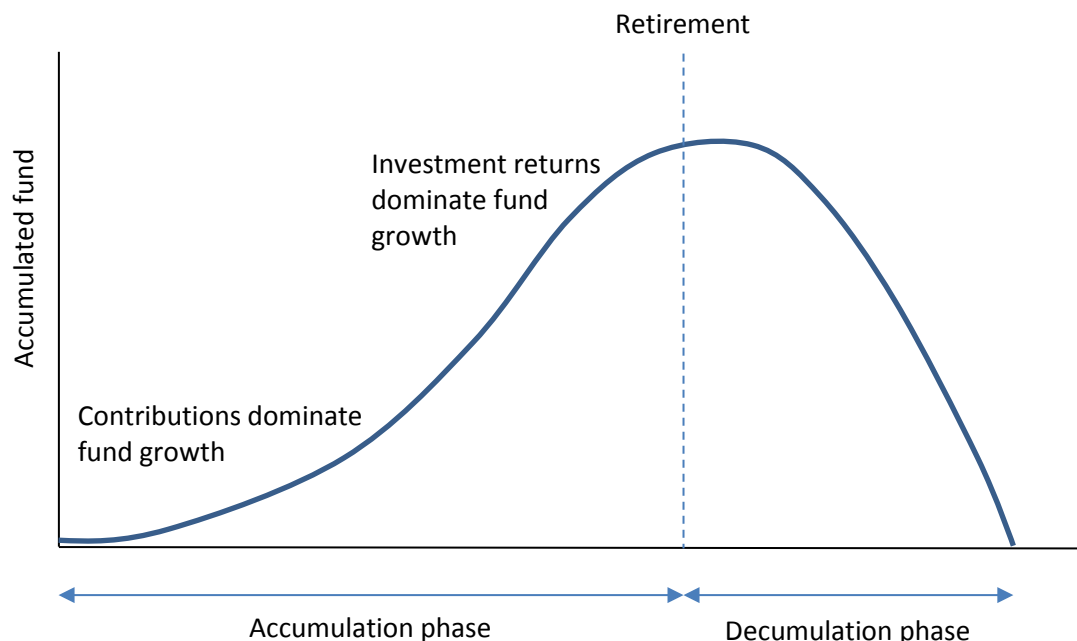
⁷ IFoA Climate Change Working Party or “Climate Change: Implications for Investors and Financial Institutions”

⁸ IPCC, 2014b. Fifth Assessment Report (AR5). <https://www.ipcc.ch/report/ar5/>

2. Relevance for defined contribution arrangements

Whilst accessible through different savings vehicles, defined contribution arrangements follow a similar pattern when considered from the perspective of an individual member. Contributions together with investment returns accumulate to provide a retirement fund as illustrated below. This fund can then be taken as a lump sum, gradually drawn-down to provide a regular income or used to purchase an annuity.

Figure 1: Illustrative fund accumulation for a DC saver



Whilst the manner in which funds are invested depends on the options made available and the choices made by the member, the level of investment return targeted and consequently the risks taken typically reduce over time. Retirement income is a function of contributions, investment return (net of charges) and of course member choices at/during retirement. However, member utility in retirement will be impacted by a range of other factors including health, inflation, mortality rates (particularly for annuity purchase) and the state of the planet – both human and natural systems.

In a climate change context, the importance of the state of the planet can be illustrated by considering the investment time horizon of DC members. For example, a 20 year-old joining a defined contribution scheme in 2018 may be saving for a period of 50 years and in receipt of pension benefits for a further 30 years beyond this.

Whilst some of the effects of climate change on the environment such as shrinking glaciers, increased storm severity, enhanced drought periods leading to wildfires and shifts in seasonal behaviours are already occurring⁹, this investment time horizon lies within the period when even greater effects of climate change, such as those mentioned in Section 1 are expected to occur. It is therefore reasonable to expect that such a member will be concerned with both the environment that they will be retiring into and the potential impact that climate change could have on their retirement savings. Research carried out on younger generation's attitudes to saving indicates that this is the case.¹⁰

In addition to these considerations, there are a number of initiatives, both regulatory and voluntary, at the UK, EU and Global level, recommending the appropriate consideration of climate risk in savings and investments. Several of these are detailed in the following section and the appendices. The Task

⁹ NASA, Global Climate Change, Vital Signs of the Planet
<https://climate.nasa.gov/effects/>

¹⁰ Morgan Stanley Institute for Sustainable Investing
<https://www.morganstanley.com/ideas/sustainable-socially-responsible-investing-millennials-drive-growth>

Force on Climate-related Financial Disclosures (TCFD), set up at the request of G20 finance ministers and central bank governors, is particularly influential. As at December 2017, it was publicly supported by 237 companies, including eight of the ten largest investment managers and twenty major global banks¹¹.

Given the growing role of DC pensions in the UK's financial future – assets in DC schemes are expected to increase six-fold by 2030 to £1.68 trillion¹², a sum equivalent to 15% of the current net wealth of the UK – it is important to consider the interaction between climate risk, DC schemes and their members.

3. Regulatory context

In the UK, DC pensions can be structured as either trust, master trust or contract based pensions, with different rules applying to each. Nonetheless, the Department of Work and Pensions ('DWP'), which sets rules for trust-based schemes, and the Financial Conduct Authority ('FCA'), which sets rules for contract based schemes, have emphasised that the outcome for pensions savers is intended to be the same whether a DC scheme is trust or contract based.

Further guidance and recommendations which are relevant to this topic have been provided by a range of bodies including the Financial Reporting Council, the Government, The Pensions Regulator ('TPR') and the Law Commission. Key messages, to the extent that they reflect climate change or broader environmental considerations, are set out below, with further detail on the relevant regulations in Appendix A. Whilst the focus of this paper is climate risk, this is of course only one of a number of risks which those charged with governance must consider.

- The **Pensions Regulator's** Guide to Investment Governance¹³ recommends to trustees that *"You should bear in mind that most investments in DC schemes are long term and are therefore exposed to the longer-term financial risks. These potentially include risks ... such as climate change. These risks could be financially significant, both over the short and longer term."*
- The **Law Commission** recommended to pension scheme trustees in 2014¹⁴ that *"Where you think environmental, social and governance (ESG) factors are financially significant, you should take these into account"*. It also recommended that the Government review the 2005 Investment Regulations that stipulate the requirements for Statements of Investment Principles (SIP), including the reference to "social, environmental or ethical considerations" and whether trustees should be required to state their policy on stewardship.
- In 2017, the **Law Commission** repeated its 2014 SIP recommendations and further recommended that¹⁵:
 - the FCA require Independent Governance Committees (IGCs) to report on policies in relation to long-term risks, including ESG impacts, and stewardship.
 - the FCA to produce similar guidance to that produced by TPR on financial and non-financial factors.
- Later in 2017, the **Government** provided an interim response¹⁶ to the Law Commission recommendations, including *"plans to clarify legislation around:*

¹¹ TCFD press release, 12 December 2017

https://www.fsb-tcfd.org/wp-content/uploads/2017/12/TCFD-Press-Release-One-Planet-Summit-12-Dec-2017_FINAL.pdf

¹² Law Commission, 2017: "Pension Funds and Social Investments"

¹³ TPR "Guide to Investment Governance"

<http://www.thepensionsregulator.gov.uk/docs/dc-investment-guide.pdf>

¹⁴ Law Commission, 2014 "Fiduciary Duties of Investment Intermediaries"

<https://www.lawcom.gov.uk/project/fiduciary-duties-of-investment-intermediaries/>

¹⁵ Law Commission, 2017 "Pension Funds and Social Investment"

<https://www.lawcom.gov.uk/project/pension-funds-and-social-investment/>

¹⁶ DWP, 2017 "Pensions funds and social investment: interim response"

<https://www.gov.uk/government/publications/pension-funds-and-social-investment-interim-response>

- *consideration of broader long term financial risks*
- *pension schemes' ability to consider members' non-financial or ethical concerns*
- *the role of engagement alongside voting as an important aspect of stewardship of pension scheme assets.*"

- In April 2015, Paragraph 2A was inserted into The **Occupational Pension Scheme Investment Regulations**¹⁷, requiring:
"trustees to prepare a written statement of investment principles for the default investment arrangement... covering the extent (if at all) to which social, environmental or ethical considerations are taken into account in the selection, retention and realisation of investments"
- The **FCA** requires:
 - *firms to pay due regard to the interests of its customers*¹⁸, and
 - *for IGCs to assess whether default investment strategies are designed and executed in the interests of policyholders*¹⁹
- The **Financial Reporting Council's** Technical Actuarial Standards²⁰ require that actuaries use assumptions and models that are fit for purpose and communicate material risks and uncertainties to clients.

In addition to these UK regulations, there are a number of global initiatives relating to climate change and investment which are pertinent, detailed in Appendix B. This is a rapidly moving area and the list contained in Appendix B is by no means exhaustive. Rather, it is hoped that it will be useful in identifying where further information can be found to support climate risk management in DC investment strategies.

4. Climate change risks and member outcomes

In his 2015 speech, "Breaking the tragedy of the horizon"²¹, Mark Carney, Governor of the Bank of England, described three categories of risk arising from climate change: physical, transition and liability risks. These risks were further outlined in the IFOA Risk Alert. Each of these risk areas has some relevance to DC pension provision, member outcomes and the potential role of actuaries.

4.1 Physical risk

Physical risks are the risks arising from potential degradation to physical assets. Such risks may arise in the short-term from damage to property due to extreme weather events such as flooding and in the longer-term from changes to rainfall patterns affecting the local use of land for agriculture and the movement of human populations reducing local workforce availability.

The potential impact of physical risks on factors that affect DC member outcomes could include:

- Increased mortality and morbidity from increasing temperatures and potential disruption to food chains.

¹⁷ The Occupational Pension Schemes (Charges and Governance) Regulations 2015

<https://www.legislation.gov.uk/ukdsi/2015/9780111128329>

¹⁸ FCA "Principles for Business", PRIN 2.1.1 R6

<https://www.handbook.fca.org.uk/handbook/PRIN.pdf>

¹⁹ FCA "Conduct of Business Sourcebook", COBS 19.5.5

<https://www.handbook.fca.org.uk/handbook/COBS/19/5.html>

²⁰ FRC Technical Actuarial Standard 100: Principles for Actuarial Work

<https://www.frc.org.uk/getattachment/b8d05ac7-2953-4248-90ae-685f9bcd95bd/TAS-100-Principles-for-Technical-Actuarial-Work-Dec-2016.pdf>

²¹ "Breaking the tragedy of the horizon – climate change and financial stability" – speech by Mark Carney, September 2015

<http://www.bankofengland.co.uk/publications/Pages/speeches/2015/844.aspx>

- Worsening societal conditions from disruption to health and social care services, involuntary forced migration, and damage to related infrastructure due to extreme weather.
- Reduced asset returns due to increased costs of climate change adaptation or loss from physical damage to assets.

4.2 Transition risk

Transition risk is the risk engendered by the transition to a low carbon economy. Depending on the nature and speed of mitigation and adaptation policies and requirements by governments and regulators related to climate change, transition risks may pose varying levels of financial and reputational risk to insurers, pension funds and other institutional investors from the potentially rapid reduction in the market value of, or income generated by, assets.

For example, the risk referred to as ‘stranded assets’ includes the inability of a company or industrial sector to extract value from its assets (e.g. plants, rights, land) due to restrictions placed on its activities or simply a collapse in the assets’ economic value. In effect, the assets become “stranded”, resulting in a decline in the balance sheet reserves and the market value of the affected company or industry, meaning the value or cash flows would no longer be able to materialise as expected.

Within the context of a DC pension arrangement, transition risks primarily relate to the investment of assets. Considerations for member outcomes and actuaries include:

- Reduced asset returns due to increased costs of climate change mitigation or losses from stranded assets²².
- Greater costs of developing and maintaining climate-aware strategies.

There are some considerations that apply to both physical and transition risks, for example:

- Default strategies that have been designed without consideration for climate risks.
- Inadequate contribution structures and/or increased contribution requirements where projections have not taken account of climate risks (given that climate-related impacts are expected to reduce asset returns).

4.3 Liability risk

Liability risk relates to the potential costs arising where third parties have suffered damage or losses from the effects of climate change and seek compensation. A commonly cited example is the case of the Pacific Island nations, whose territory may disappear as sea levels rise, seeking recompense from industrial nations.

In the context of DC pension arrangements, liability risk could arise for both members, within the investment of assets, and those involved in providing services such as administrators, actuaries, trustees and investment managers.

- Members could suffer losses from liability risk to the extent that their assets are invested in companies which are held liable for, and required to make recompense for, losses attributable to climate change. This could include fossil fuel and mining companies, but also those providing insurance coverage.

²² Studies that have shown reduced asset returns include:

- “Investing in a time of Climate Change”, Mercer, 2015, <https://www.mercer.com/our-thinking/investing-in-a-time-of-climate-change.html>
 - “Unhedgeable Risk”, Cambridge Institute of Sustainability Leadership, 2015, <https://www.cisl.cam.ac.uk/publications/sustainable-finance-publications/unhedgeable-risk>
 - “The Cost of Inaction”, Economic Intelligence Unit, 2015, <http://www.eiuperspectives.economist.com/sustainability/cost-inaction>

See also section 4.4.

- Trustees could be subject to liability risk from an event such as a class action by a group of DC pension scheme members, seeking to recoup investment losses arising from climate risk to the extent that this has not been addressed within a default investment strategy.
- Actuaries could be subject to litigation from members and/or trustees for not highlighting the potential financial risks arising from climate change in their advice. The potential for professional liability risks in this area has been highlighted in recent reports²³ by Client Earth, an environmental law charity. Whilst the reports were written for DB pensions advisors, many of the risks highlighted could also be applicable to DC advisors.

4.4 The role of the default investment strategy

In a world of auto-enrolment and low member engagement, few members are sufficiently engaged or knowledgeable to understand the role that asset owners play in capital allocation. Nonetheless, they might reasonably expect that those in positions of authority, with responsibility to invest in a member's best interests, would understand this and appropriately consider their long-term outcomes in their investment principles and decisions.

The “default investment strategy” is intended to be suitable for those who lack the skill, time or knowledge to make their own investment choices. Generalising, default strategies typically target high levels of return through investment in equity or similar growth assets when members are some time from retirement, reducing risk as the term to retirement falls.

Although, by definition, a qualifying auto-enrolment scheme must have a single default strategy, some DC arrangements may offer members a menu of alternative “house” strategies that reflect different risk appetites. In each case, members may assume that all material sources of risk will have been considered by those designing the strategies. Indeed, as discussed in section 4.5, considering all material financial risks is a fiduciary duty for trustees.

Consider then the risk posed by stranded assets, such as coal or other fossil fuel reserves, that may suffer a loss of value as outlined in 4.2. Under a business-as-usual scenario, these firms currently add value to company and sovereign balance sheets. However, some commentators have estimated that over 25% of companies (by capitalisation) could be directly or indirectly impacted by policy actions to limit future carbon emissions²⁴.

Mercer's 2015 report, “Investing in a time of climate change”²⁵ investigated potential impacts on asset prices under different climate scenarios, concluding that returns could vary widely by industry sector, depending on the scenario that plays out. Mercer illustrated that the coal sub-sector is particularly exposed, a finding reinforced by Carbon Tracker's 2015 report, “The US Coal Crash – Evidence for Structural Change”²⁶, which provided some evidence of material impacts in this sector, not least the discrepancy in investment returns. Over the five-year period to 31 December 2014, the Dow Jones US Total Market Coal Sector delivered a -76% return compared with a 69% return for the Dow Jones Industrial Average.

Default investment strategies with an equity component invested in line with a market-capitalisation weighted index give no particular consideration to risks such as those of stranded assets; it is simply assumed that market price is the sole determinant of value. Yet Mark Carney raised the question in his talk on the “Tragedy of Horizons” as to whether the market was accurately pricing these risks²⁷. As with any risk, quantification and understanding will be important to guide decisions and answer

²³ Risky business: Climate Change and Professional Liability Risks for DB Investment Advisors

<https://www.clientearth.org/new-reports-bring-light-climate-liability-risks-facing-pensions-advisers/>

²⁴ The tip of the iceberg: the implications of climate change on financial markets

<https://bankunderground.co.uk/2017/01/23/the-tip-of-the-iceberg-the-implications-of-climate-change-on-financial-markets/>

²⁵ “Investing in a time of Climate Change”, Mercer, 2015

²⁶ “The US Coal Crash”, Carbon Tracker, 2015

<https://www.carbontracker.org/wp-content/uploads/2015/03/US-coal-designed-Web.pdf>

²⁷ Speech at Lloyd's of London on 29 September 2015

<https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability>

questions around materiality, impact on default investment strategies, likelihood and timescales. Whilst a range of commentators are contributing to the debate, given the uncertainty and wide range of potential outcomes, there are good reasons to think that the market may not have correctly priced climate-related risks into stock valuations. A number of innovative approaches are being developed by asset managers and owners to address this risk, with alternatives being provided to market cap trackers. Two such examples are detailed in the case studies.

The opportunity set is presented by investment into those companies which are well positioned with regards to the energy transition. For example, electric vehicle manufacturers, renewable energy companies or an extractive company which is moving out of coal and into renewables could all be considered as providing upside exposure with regards to transition risk. In “Investing in a time of climate change” Mercer estimated that renewables’ average annual returns could increase by between 6% and 54% over the period 2015 to 2050, again depending on which scenario plays out.

There is also great disparity between various sectors of the market. Seba’s “Re-thinking transportation 2020-2030”²⁸ predicts much faster than anticipated disruption of the internal combustion vehicle market by electric vehicles, leading to a subsequent drop in oil demand, whereas BP’s energy outlook²⁹ suggests a more linear path.

The challenge for those designing and advising on default investment strategies is therefore the extent to which they should consider climate related risks and opportunities. Given the current debate and the moves by some towards more “climate aware” strategies, it could be contended that the risks are foreseeable and hence addressable; this opens the door to potential litigation against groups such as trustees, advisors or DC pension providers if they do not take account of them. However, given that climate aware strategies have higher investment management costs than standard index-tracking strategies, it will be important to consider the overall value for money of such investments when compared with alternatives which carry lower management and administrative costs.

4.5 Fiduciary duties in DC

It is easy to see how trustees and others charged with scheme governance, who select a pension investment which is environmentally unsustainable, e.g. because it is associated with high greenhouse gas emissions, could be challenged over whether they are really investing in a member’s best interests. For example, if a pension scheme invests in a corporate which promises short term profits from coal mining, is this in a member’s long-term interests if the coal usage is a direct contributor to climate change?

This raises a question about whether DC pension arrangements should more broadly reflect the role they play in shaping the future world, as material and strategic asset owners who drive capital allocation decisions and shareholders who influence corporate behaviour. However, the interactions between investment risk and return, and climate risk and solutions, are not straightforward, with no zero risk answer. Decision makers need to be risk aware and balance different timescales when investing. And they may be likely to look to their investment advisors, both actuarial and non-actuarial, for support and guidance in this complex area.

The Law Commission’s 2014 guidance only requires trustees to take into account factors that are likely to have a material financial impact on performance; non-financial factors can be considered to the extent that they reflect a broader consensus amongst members, provided that doing so does not involve a risk of significant financial detriment.

²⁸ “Re-thinking transportation 2020-2030”

https://static1.squarespace.com/static/585c3439be65942f022bbf9b/t/591a2e4be6f2e1c13df930c5/1494888038959/RethinkX+Report_051517.pdf

²⁹ BP “Energy Outlook 2017”

<https://www.bp.com/content/dam/bp/pdf/energy-economics/energy-outlook-2017/bp-energy-outlook-2017.pdf>

To the extent that climate change could have a material impact on long-term member outcomes in a variety of ways, both financial and non-financial, then there is an argument for including it appropriately in analysis and decisions.

5. Case studies – HSBC Bank (UK) Pension Scheme & NEST

In response to growing awareness of climate risk and increasing demand from investors, index providers and asset managers have, over the course of 2016 and 2017, sought to develop a range of “climate aware” investment solutions. These solutions, some of which are targeted towards the DC market, provide elements of both risk mitigation and upside opportunity exposure. They include actively managed equity funds with long-term objectives, and the emergence of a number of low carbon indices and sophisticated factor-based investments. Many of these also incorporate a more active policy on stewardship, with some investments having clear criteria for active engagement on climate issues.

During this time, there have been two high profile examples of DC pension providers taking account of climate risk in their investment arrangements. These are the National Employment Savings Trust (‘NEST’) and HSBC Bank’s UK Defined Contribution Scheme (‘HSBC’), both of which introduced climate aware strategies into their default investment strategies during 2016 and 2017.

Both solutions start with an index, then overweight and underweight certain stocks according to a set of specific criteria, including a range of climate metrics. The weightings are designed not only to mitigate downside transition risk but also to potentially capture upside opportunities. Stewardship is a core component of both funds, with each manager pursuing an active engagement strategy, which will include voting on climate related issues.

Interviews were held with the Chief Investment Officers of NEST and HSBC to explore the process each scheme went through to develop and implement these investment strategies. These are presented below as case studies to support investment actuaries in understanding how other schemes have approached the climate risk challenge. The solutions developed by these two schemes are available for other investors to use. Other providers offer similar solutions and a growing number of alternatives are becoming available.

Case Study 1: NEST

This case study covers the decision by NEST to migrate a proportion of its equity assets into a new climate-tilted fund. As at May 2017, this allocation represented about 20% of its developed equity portfolio and around 10% of total investment in the default strategy.

What drove the discussion?

NEST wanted to understand their potential exposure to stranded fossil fuel assets. A project was initiated in 2014 to undertake primary research and to meet with a range of stakeholders in the investment, scientific and government worlds (including the Intergovernmental Panel on Climate Change and UK Committee on Climate Change) to better understand the risks.

In addition to undertaking the research, NEST joined the Institutional Investors Group on Climate Change and become a signatory to the Paris Pledge for Action³⁰. Since 2014, NEST has also become a signatory to the Principles for Responsible Investment³¹.

How did they assess risk and opportunity?

The key outcome of the project was an assessment that there could be a material capital market impact over the medium to long term, as a result of transition risk, but that there would also be investment opportunities, with the opportunity set presented by companies that are well positioned to support the transition to a low carbon economy.

³⁰ <http://www.parispledgeforaction.org/>

³¹ <http://www.unpri.org/>

What solutions were considered?

Following the Paris agreement in 2015, NEST moved into solution mode in 2016. NEST identified that it had a large exposure to high carbon extractive companies but, in addition to seeking mitigation of this risk, wanted a solution that would be both dynamic and able to realise the investment opportunity afforded by the transition to a lower carbon economy.

A period of engagement with fund managers took place to understand the existing solutions available in the market. Low carbon tracker indices were discounted as many of these lacked the desired level of exposure to the opportunity companies, whilst others which were purely environmental were considered to be too concentrated and volatile.

NEST approached their incumbent equity manager to see if they could work together to develop a solution. NEST wanted a sophisticated solution that would not be based on exclusion, but would rather incorporate a tilt towards opportunity companies and tilt away from those companies with a high risk of stranded assets or a poor score on carbon metrics (high carbon emitters).

Brief overview of characteristics of investment solutions

The fund tracks the FTSE Developed Index but overlays a climate tilt onto the index weightings so that it is overweight and underweight certain stocks. The fund has a performance tracking budget of +/- 50 bps against the index to facilitate the weighting, although this constraint limits the ability of the manager to mitigate climate risk. In particular:

1. The fund applies a positive 'tilt' by overweighting companies identified as in the opportunity set, for example those working on renewable energy, or that are making the necessary changes to transition to a low carbon economy.
2. The fund applies a negative 'tilt' to underweight companies that are heavy carbon emitters, have fossil fuel reserves or are not enacting the change needed to meet emission reduction targets to support the transition to a low carbon economy.
3. The fund has an active engagement and voting strategy with a bespoke set of guidelines on voting and engagement. It concentrates voting and engagement activities on improving companies that most need to adapt their business models in order to meet climate change goals.

A proprietary model is used to assess each company in the index to ascertain whether it is on the transition pathway to a 2 degree world or not. This quantitative assessment is then overlaid with qualitative factors, information about carbon intensity, renewable energy, fossil fuel reserves and emissions produced.

The assessment is nuanced, not simply looking at carbon emissions or reserves but also considering the direction of travel for each company. In this way, a decision is made on whether each index constituent should be overweight, neutral or underweight – and by how much.

By way of example, one utility company may be slightly overweight as despite a currently high carbon footprint it is reducing emissions, moving away from coal and investing in renewables. In contrast, another utility company might be underweight as, despite an investment in wind, overall carbon emissions are still rising and there is still a heavy coal weighting.

Underweight companies will be informed that they are underweight and given reasons why. If necessary, the fund will then back up the engagement with voting.

The fund has an independent board that oversees the assessment process.

The fund is re-balanced on a quarterly basis by the investment manager, thereby fulfilling the desired dynamic element for the process.

What was the reaction of members?

There have not, to date, been any direct consultations held or feedback taken from members. However, the Cambridge University-supported Investment Leaders Group is currently undertaking a project in collaboration with NEST to survey the general population on the extent of their interest and engagement in areas such as sustainable investment. Given there are 5 million members currently invested through NEST, those surveyed will likely include many NEST members.

Case study 2: HSBC Bank (UK) DC Pension Scheme

This case study covers the decision by HSBC Bank (UK) DC Pension Scheme to invest its £1.85 bn equity asset allocation in the default investment strategy into a climate-aware fund.

The fund is based on the FTSE All-World equities index universe (excluding controversial weapons), with the remaining constituents' weights then adjusted to reflect value, size, low volatility and quality factors. The resultant factor-weighted index is then further adjusted to reflect three climate change parameters: carbon emissions, fossil fuel reserves and green revenues.

What drove the discussion?

ESG risks are integrated into the way that the HSBC pension fund trustees think about their fiduciary role. ESG beliefs have been a key topic at trustee offsite days over the years and the group is now in a position where all 13 trustees agree that incorporating ESG considerations into investment decision making is part of the fiduciary duty of a trustee.

How did they assess risk and opportunity?

In June 2015, the Trustee had adopted a Climate Change Risk policy of its own. Following this, it was considering how to incorporate sustainability more fully into its existing investments.

What solutions were considered?

The Trustee approached its existing passive global equity manager and investment consultant along with the index provider to propose the creation of a new fund that would fulfil the following three criteria:

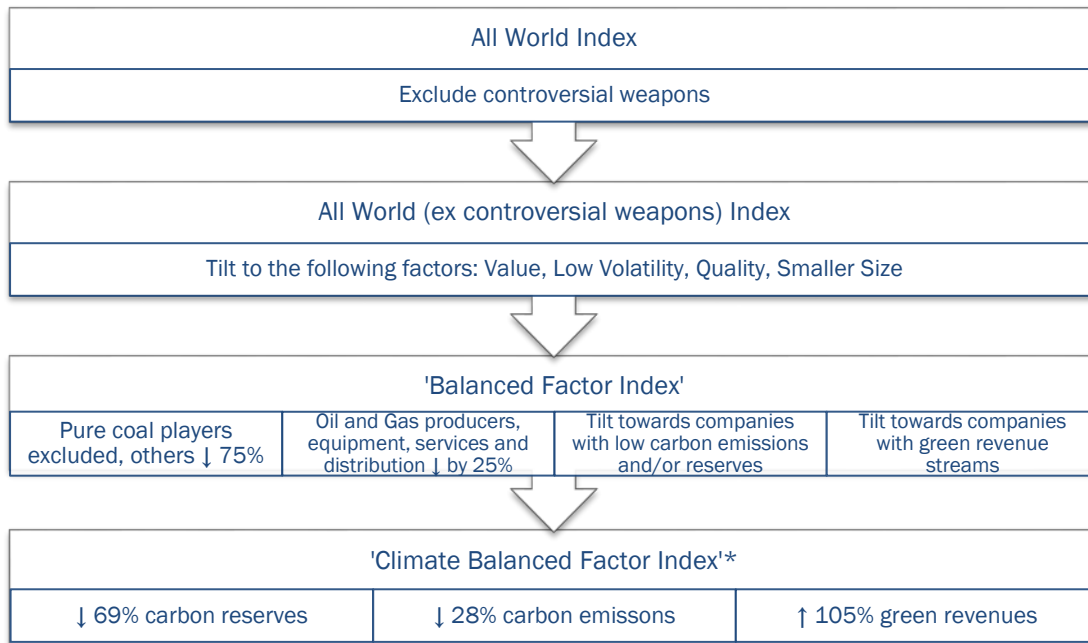
1. Better risk adjusted returns
2. Protection for climate change risks
3. Improve ESG engagement

These four actors worked together to develop a solution. Its equity manager was appointed to the project management role and the CIO of the HSBC Bank (UK) Pension Scheme was appointed as project sponsor.

The CIO stresses the importance of continuous socialisation with stakeholders at the pension scheme and the corporate sponsor. The HSBC scheme has a robust governance process with several layers of approval required before the new fund could be implemented. The CIO was able to make this process happen during a short timeframe due to making sure everyone 'came along on the journey'.

Brief overview of characteristics of the investment solution

Development of the index is best described in a series of layers:



* Relative to the market capitalisation index

The index provider created the index which the passive manager then tracks. Criteria 1 and 2 are fulfilled by the index and criterion 3 is covered by the fund manager through its Climate Impact Pledge. The manager identified around 90 of the largest companies that are pivotal to shift the market to a low carbon economy. The companies are ranked based on a stringent scoring methodology and then the manager engages with the companies' senior management to understand their plans to transition to a sustainable future. The fund has a limited tracking error budget to implement a divestment strategy if poor performers do not respond or seek to improve.

What was the reaction of members?

Every three years the HSBC Trustee carries out a review of the DC offering: one component of this review is a nationwide set of panel sessions to talk to members. The CIO reports positive reactions from members on the fund's introduction thus far. In particular, younger scheme participants have shown interest and a desire to learn more about the fund. He hopes that the environmental angle of the fund will act as a hook to engage millennials with their pension.

6. Take away actions for DC pensions actuaries

The growth in DC pension provision and the longevity of members within DC pension arrangements could result in many members seeing their retirement affected in some way by climate change. There remains considerable uncertainty about these effects, to some extent because of the unknown human response to climate change and partly because of the complexity of the climate change system itself. It is, however, clear that climate change poses a risk. As Mark Carney said in September 2015:

“Policy action to promote the transition towards a low-carbon economy could spark a fundamental reassessment [of asset values]. ... a wholesale reassessment of prospects [for the fossil fuel sector], especially if it were to occur suddenly, could potentially destabilise markets, spark a pro-cyclical crystallisation of losses and a persistent tightening of financial conditions.”³²

³² Speech at Lloyd's of London on 29 September 2015

<https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability>

As noted in section 4.3, ClientEarth has highlighted the professional liability risks to pensions advisors³³.

For those actuaries involved in advising DC arrangements, there are various actions that could be taken in order to develop an approach to climate risk mitigation, as follows:

- Acquire an appropriate level of professional knowledge, to understand climate risk, the financial stability implications and how these should be included in the risk management framework for DC schemes. Wider stakeholders may expect and indeed welcome actuarial leadership in this matter, which will require a thorough and up to date knowledge of relevant risks, insights and solutions.
- Consider including an appropriate statement in reports on whether and how climate risk has been incorporated into advice, having regard to the IFOA's risk alert¹.
- Consider whether climate risk should be incorporated into the default investment strategy design.
- Consider whether any communication with scheme members should be undertaken with reference to climate risk.
- Consider whether scheme governance committees and trustee boards have appropriate knowledge and understanding of climate risk information, as well as specific information on the climate risk exposure of their scheme, to make meaningful decisions on climate risk. The type of decision required will be different for trustees and IGCs, as trustees can make investment decisions. IGCs do not make investment decisions but can decide whether or not they believe a provider is appropriately considering these risks.
- Consider whether the scheme's self-select funds offer sufficient choice to members with respect to climate risk. Many schemes already offer ethical funds but few currently provide funds with a clear ESG, carbon or climate aware focus as part of their range. Actuaries need to understand how these funds operate, what climate risks they are aiming to mitigate and how effective the various market offerings are in achieving the end mission and goal of members invested.
- Consider whether DC schemes should be creating more demand for investment solutions that mitigate the risks identified, including multi-asset solutions.
- Consider the extent to which climate risk and the potential impact on future returns within investment modelling work could affect the design of contribution structures and/or the assumptions made for income projections. The IFOA has commissioned some research, due to be published in the first half of 2018, into the possible effects of climate change on key financial parameters which may offer further insight on this topic.

³³ Risky business: Climate Change and Professional Liability Risks for DB Investment Advisors
<https://www.clientearth.org/new-reports-bring-light-climate-liability-risks-facing-pensions-advisers/>

Appendix A – UK-specific DC pension regulation and guidance which is relevant to climate risk

Financial Reporting Council’s Technical Actuarial Standards³⁴

- Compliance with all relevant Technical Actuarial Standards (‘TASs’) is compulsory for Actuaries in scope.
- The Technical Actuarial Standards require that actuaries use assumptions and models that are fit for purpose and communicate material risks and uncertainties to clients.

FCA requirements – COBS³⁵ and PRIN³⁶

- The FCA requirements apply to contract based schemes and the providers of contract based schemes.
- The FCA’s Principles of Business, in particular PRIN 6:
A firm must pay due regard to the interests of its customers and treat them fairly.
- The FCA’s Conduct of Business Sourcebook, in particular COBS 19.5.5 (2) (a) (i) and (b):
COBS 19.5.5 (2) (a):
*whether default investment strategies within those schemes:
(i) are designed and executed in the interests of relevant policyholders;*
COBS 19.5.5 (2) (b):
whether the characteristics and net performance of investment strategies are regularly reviewed by the firm to ensure alignment with the interests of relevant policyholders and that the firm takes action to make any necessary changes.
- FG16/8, the FCA’s Finalised Guidance on Fair treatment of long-standing customers in the life insurance sector. While the guidance is aimed at closed book customers it does provide clarity on FCA expectations, in particular emphasising the relationship between Principle 6 and product terms and conditions in guidance relating to sub-outcome 1.1:
We expect a firm to take proper account of fair customer outcomes and apply T&Cs in conjunction with the Principles. Firms should not, therefore, just rely on T&Cs to defend outcomes which are unfair under Principle 6.

The Occupational Pension Scheme (Investment) Regulations³⁷

- The Occupational Pension Schemes (Investment) Regulations 2005 apply to Trust based schemes.
- In particular, paragraph 2A requires that a Statement of Investment Principles is prepared for the default DC investment:
2A (1) The trustees or managers of a relevant scheme must prepare a statement of the investment principles governing decisions about investments for the purposes of the default arrangement, and that statement must be in writing and must cover at least the following matters:

³⁴ <https://www.frc.org.uk/actuaries/actuarial-policy/technical-actuarial-standards>

³⁵ <https://www.handbook.fca.org.uk/handbook/COBS/>

³⁶ <https://www.handbook.fca.org.uk/handbook/PRIN/>

³⁷ <http://www.legislation.gov.uk/ukxi/2005/3378/contents/made>

- (a) the aims and objectives of the trustees or managers in respect of such investments;
- (b) their policies in relation to the matters mentioned in regulation 2(3)(b) in respect of the default arrangement; and
- (c) an explanation of how the aims and objectives mentioned in sub-paragraph (a) and the policies mentioned in sub-paragraph (b) (together “the default strategy”) are intended to ensure that assets are invested in the best interests of the group of persons consisting of relevant members and relevant beneficiaries.

- The aforementioned regulation 2(3)(b) concerns risks and how trustees have taken into account social, environmental or ethical considerations:
 - 2 (3) (b) their policies in relation to -
 - (iii) risks, including the ways in which risks are to be measured and managed
 - (vi) the extent (if at all) to which social, environmental or ethical considerations are taken into account in the selection, retention and realisation of investments

The Law Commission’s 2014³⁸ and 2017³⁹ reports

- The Law Commission is the statutory independent body created by the Law Commissions Act 1965 to keep the law of England and Wales under review and to recommend reform where it is needed. The aim of the Commission is to ensure that the law is fair, modern, simple and cost-effective.
- The Law Commission has published two reports relating to the topic of this guide, “Fiduciary Duties of Investment Intermediaries” (published July 2014) and “Pension Funds and Social Investments” (published June 2017).
- The 2014 report’s recommendations include:
 - For trust-based pensions, the Occupational Pension Schemes (Investment) Regulations 2005 should be amended in the following ways:*
 - *The reference to “social, environmental or ethical considerations” should be amended to ensure that it accurately reflects the distinction between financial factors and non-financial factors.*
 - *There should be a requirement that the statement of investment principles (SIP) produced by trustees should state trustees’ policy (if any) on stewardship.*
- On their website, the Law Commission states “In October 2014, the Government accepted the majority of recommendations made in the 2014 report”. It consulted on changing the Investment Regulations in line with the recommendations, but decided that TPR should issue guidance instead.
- The Law Commission’s 2014 guidance has been summarised by The Pensions Regulator in its Investment Governance guidance for DC trustees as:

You should take into account factors which are financially material to the performance of an investment.

Where you think environmental, social and governance (ESG) factors are financially significant,

³⁸ <https://www.lawcom.gov.uk/project/fiduciary-duties-of-investment-intermediaries/>

³⁹ <https://www.lawcom.gov.uk/project/pension-funds-and-social-investment/>

you should take these into account. Likewise if you think certain ethical issues are financially significant.

While the pursuit of a financial return should be your main concern, the law is sufficiently flexible to allow you to take other, non-financial factors into account if you have good reason to think that scheme members share your view and there is no risk of significant financial detriment to the fund.

- The June 2017 report repeats the recommendations above and makes further specific recommendations:

For contract-based pensions, the Financial Conduct Authority should require schemes' Independent Governance Committees to report on a firm's policies in relation to:

- *evaluating the long-term risks of an investment, including relating to corporate governance or environmental or social impact;*
- *considering members' ethical and other concerns; and stewardship.*

We also recommend that the Financial Conduct Authority should issue guidance for contract-based pension providers on financial and non-financial factors, to follow the guidance for trust-based schemes given by The Pensions Regulator.

The Government has provided an Interim Response to the 2017 recommendations, as outlined in Section 3.

The Pensions Regulator's "Guide to Investment Governance"⁴⁰

- TPR has produced a series of guides to support trustee boards in meeting the standards set out in their DC code, which sets out the standards TPR expects trustees to meet when complying with the law.
- The 'Guide to Investment Governance' is a DC-specific document, prepared to help trustee boards with implementing appropriate investment governance.
- In addition to the summary of the Law Commission guidance quoted above, the guide states on Sustainability:

You should bear in mind that most investments in DC schemes are long term and are therefore exposed to the longer-term financial risks. These potentially include risks relating to factors such as climate change, unsustainable business practices, unsound corporate governance etc.

These risks could be financially significant, both over the short and longer term. You should therefore decide how relevant these factors are as part of your investment risk assessment.

⁴⁰ <http://www.thepensionsregulator.gov.uk/docs/dc-investment-guide.pdf>

Appendix B – Global Capital Market Initiatives Linked to Climate Change

The list below is by no means exhaustive.

- FSB task force on climate related financial disclosures, which has recently published its recommendation report⁴¹. The task force aims to improve the information available to investors on climate risk.
The Task Force on Climate-related Financial Disclosures (TCFD) has made recommendations for a voluntary, consistent climate-related financial risk disclosure framework for use by companies in providing information to investors, lenders, insurers, and other stakeholders.

The Task Force will consider the physical, liability and transition risks associated with climate change and what constitutes effective financial disclosures across industries.
- United Nations Principles for Responsible Investment⁴²
The PRI works to to understand the investment implications of environmental, social and governance (ESG) factors and to support its international network of investor signatories in incorporating these factors into their investment and ownership decisions.
- Transition Pathway Initiative⁴³
The TPI aims to evaluate what the transition to a low carbon economy looks like for companies in high-impact sectors starting with oil and gas, mining, electricity generation, cement, iron and steel and autos. This enables asset owners and other stakeholders to make informed judgements about how companies with the biggest impact on climate change are adapting their business models to prepare for the transition to a low carbon economy.
- Carbon Tracker⁴⁴
Carbon Tracker is an independent financial think tank which provides in-depth analysis on the impact of climate change on capital markets and investment in fossil fuels, mapping risk, opportunity and the route to a low carbon future.
- Institutional Investors Group on Climate Change⁴⁵
IIGCC provides investors with a collaborative platform to encourage public policies, investment practices, and corporate behaviour that address long-term risks and opportunities associated with climate change.
- EU High Level Expert Group on Sustainable Finance⁴⁶
This group is due to report at the end of 2017 with recommendations for the EU to reform rules and financial policies to facilitate green and sustainable investment.
- ShareAction⁴⁷
ShareAction is an organisation with a mission to transform capital markets into a greater force for public good. Their vision is of a responsible investment system that truly serves savers, communities, and protects our environment for the long term.
- Asset Owners Disclosure Project (now operated by ShareAction)
The Asset Owners Disclosure Project was an independent not-for-profit global organisation whose objective is to protect asset owners from the risks posed by climate change. It does this by working with pension funds, insurance companies, sovereign wealth funds, foundations and

⁴¹ FSB task force on climate related financial disclosures

<https://www.fsb-tcfd.org/publications/final-recommendations-report/#>

⁴² <https://www.unpri.org/>

⁴³ <http://www.lse.ac.uk/GranthamInstitute/tpi/>

⁴⁴ <https://www.carbontracker.org/>

⁴⁵ <http://www.iigcc.org/>

⁴⁶ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en

⁴⁷ <https://shareaction.org/>

universities to improve the level of disclosure and industry best practice. It is now a part of ShareAction.

- *The 2° Investing Initiative⁴⁸*

The Two Degrees Investing Initiative] is a multi-stakeholder think tank working to align the financial sector with 2°C climate goals. Their research and engagement activities seek to:

- *Align investment processes of financial institutions with 2°C climate scenarios;*
- *Develop the metrics and tools to measure the climate performance of financial institutions; and*
- *Mobilize regulatory and policy incentives to shift capital to energy transition financing.*

⁴⁸ <http://www.2degrees-investing.org/>