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Net Zero Investing

A Beginner's Guide

Report by the IFoA Sustainability Volunteers Group –
Net Zero Portfolio Alignment Working Group

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Introduction

Investing to achieve Net Zero continues to be in the headlines and on the agenda of asset owners and asset managers around the world. As actuaries, we are often involved in advising clients or our employers on how to invest to meet their future financial liabilities. It is becoming increasingly important that we are also able to advise clients on how these investments can address climate change risks, especially the potentially catastrophic impacts of failing to reduce and reverse greenhouse gas emissions.

Many initiatives have emerged to promote and support the transition to Net Zero, including a number of investment frameworks.

The Net Zero Portfolio Alignment Working Group was established by the IFoA's Sustainability Board to create material to help actuaries understand this key area as well as to help them navigate the various initiatives and frameworks.

The Sustainability Board, together with initiatives such as the Sustainability Volunteer Group (SVG) and Sustainable Finance Community have issued a wide range of guides and support to help actuaries speak up about climate change and support their organisations in tackling its impact. This includes a Risk Alert issued in April 2021 reminding actuaries of the importance of considering and communicating clearly the impact of climate change and sustainability related issues in their actuarial work. For more see: <https://www.actuaries.org.uk/practice-areas/sustainability>

This report is aimed at actuaries who are keen to learn more about how investing can help address climate change. We appreciate that actuaries who are new to the subject may be put off learning more due to the daunting number of acronyms and complex jargon of the world of Net Zero investing. We aim to address this by introducing key concepts, organisations and frameworks at a high level.

The contents of this report reflect the authors' understanding of some of the key elements of Net Zero investing, but it is not intended to be a comprehensive study of the subject. The final section of this paper includes links to some of the many Net Zero websites and technical reports available today.

Please note that every effort has been made to accurately present information and to provide references, but any errors and omissions are those of the authors and feedback is welcome.

The Working Party has also produced a number of podcasts on Net Zero investing and you can find them on the IFoA podcast channel here: <https://audioboom.com/channels/5011686>

What is Net Zero?

Global level Net Zero

To understand Net Zero, we need to understand the context of global warming. The widely accepted position today is that:

- Human ('anthropogenic') activity has contributed to global warming through increasing the concentration of greenhouse gases (GHG) such as carbon dioxide (CO₂) in the atmosphere, and
- We must limit global temperature rise to 1.5°C above pre-industrial levels for the best chance of avoiding catastrophic climate breakdown.

This position is described in research published by the UN’s climate science arm, the Intergovernmental Panel on Climate Change (IPCC), in their *2018 Special Report on Global Warming of 1.5°C*¹ and the *2021 IPCC 2021 Sixth Assessment Report*². This latter report has confirmed that climate change is already affecting every region on Earth, its impacts increasingly visible in the form of extreme weather, worsened droughts, and heightened risk of forest fires. Climate change and its negative impacts have advanced more rapidly than predicted in the IPCC’s previous assessment reports.

The 2015 Paris Agreement, a legally binding international treaty, aims to limit global warming to well below 2 degrees, with efforts to pursue 1.5 degrees Celsius, compared to pre-industrial levels.

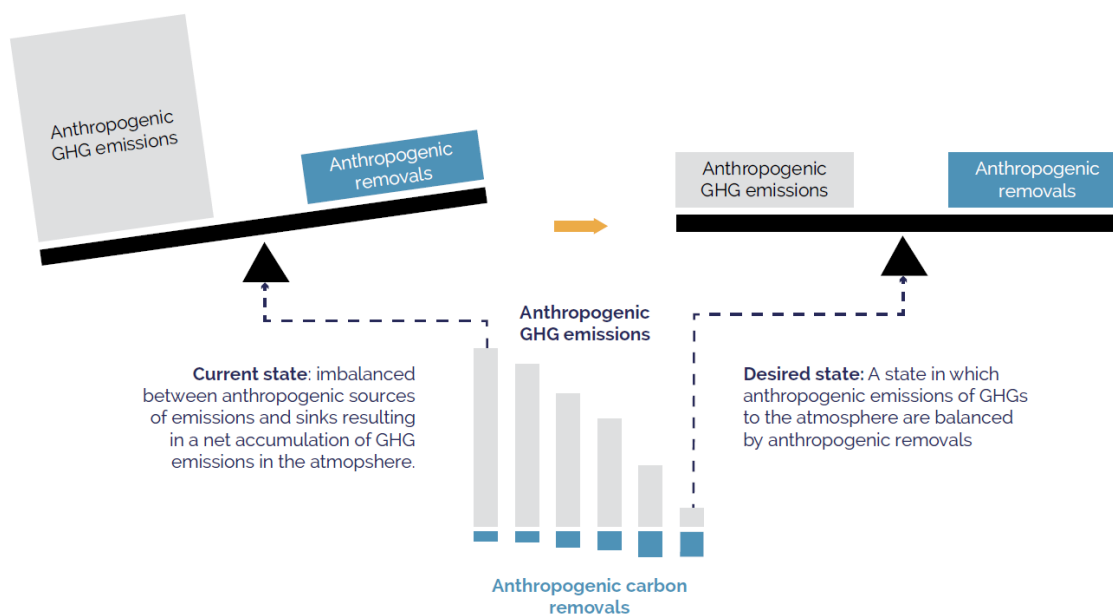
In order to achieve this the world must reach a state of Net Zero, requiring a dramatic reduction in greenhouse gas (GHG) emissions. The IPCC define Net Zero as:

“When anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period”

The Science Based Targets initiative (SBTi)³ explains this further in a 2020 paper as:

“Reaching net-zero emissions at the global level means that, in aggregate, all sources of anthropogenic GHG emissions that currently total up to 55 GT of tCO2e per year, will have to be eliminated, and those emissions that cannot be eliminated due to technical or economic reasons, will have to be counterbalanced with an equivalent amount of anthropogenic carbon dioxide removals (CDR).”

At a global level, this can be visualised as⁴:



¹ Special Report on 1.5°C (SR15): <https://www.ipcc.ch/sr15/>

² Sixth Assessment Report (AR6): <https://www.ipcc.ch/assessment-report/ar6/>

³ Science Based Targets (SBT): Foundations for Science-Based Net-Zero Target Setting in the Corporate Sector: (<https://sciencebasedtargets.org/resources/files/foundations-for-net-zero-full-paper.pdf>)

⁴ Source: Figure 1: Net-zero emissions at the global level (SBT: Foundations for Science-Based Net-Zero Target Setting in the Corporate Sector – see footnote 3 for link)

GHG emissions are often expressed as 'CO₂e' which refers to 'carbon dioxide equivalent', a way of representing the impact of other GHG such as methane or nitrous oxide in terms of CO₂⁵. The term 'tCO₂e' means the amount of greenhouse gasses emitted during a given period, measured in metric tons of CO₂e.

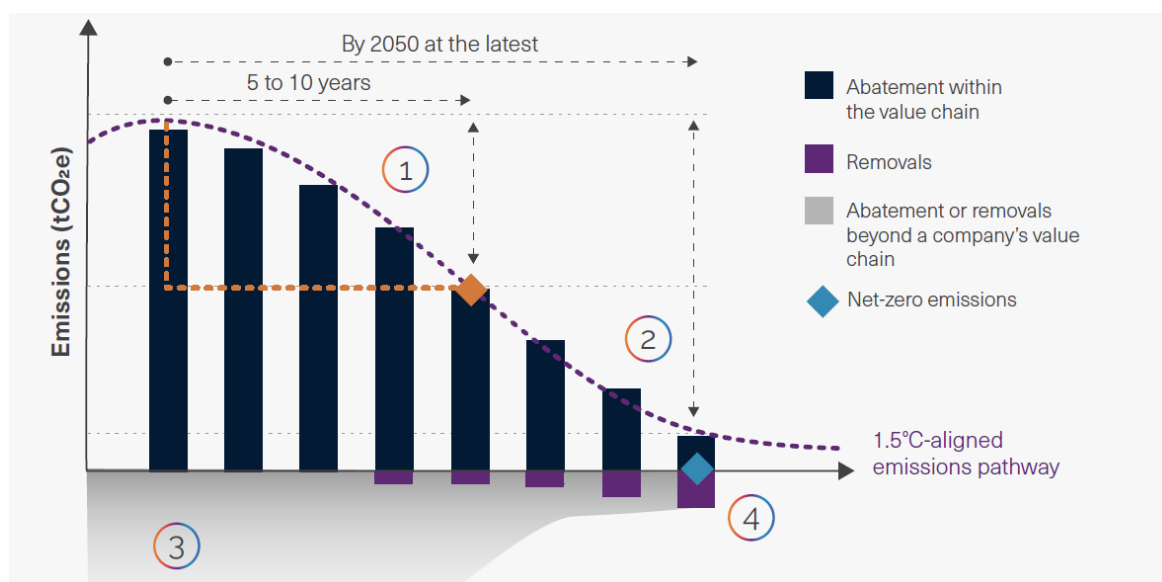
The Paris Agreement goals require actions to be taken to reduce emissions in order to limit global warming to 1.5°C. These actions include: decarbonisation of energy supplies, shifts in behaviours and technology innovation. The scale of the action required is illustrated by the IPCC research which found that:

"In model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO₂ emissions decline by about 45% from 2010 levels by 2030 (40–60% interquartile range), reaching net zero around 2050 (2045–2055 interquartile range)."

This finding explains why many organisation have set Net Zero commitments for the 'near term' (i.e. by 2030) and 'long term' (i.e. by 2050).

Company level Net Zero and emissions across the value chain

At an individual company level, the journey to Net Zero can be illustrated⁶ as:



The numbers in this diagram refer to stages in the Net Zero journey, with (1) and (2) relating to near-term and long-term targets for a company to abate (reduce) GHG emissions in their 'value chain' and (3) and (4) relating to mitigating or removing GHG emissions, both within and beyond a company's value chain.

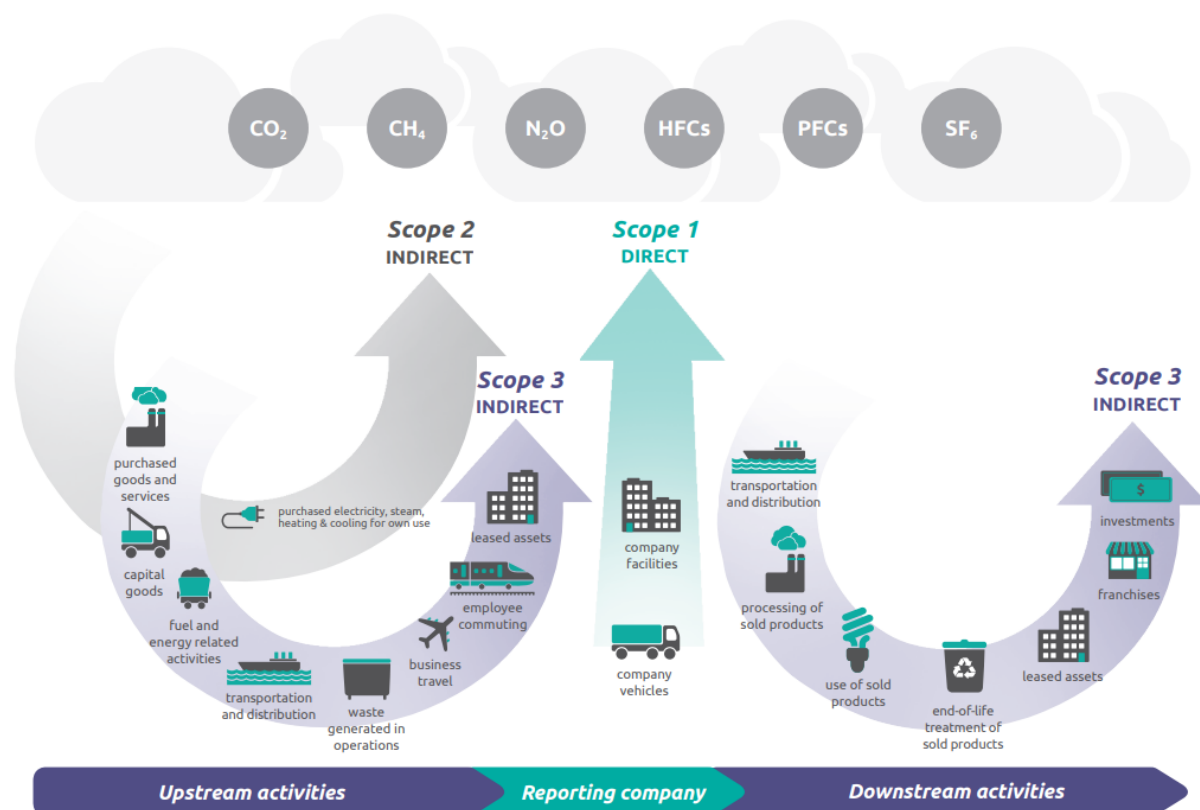
The GHG emissions of a company are commonly referred to as Scope 1, 2 or 3, depending on how and when they arise in the value chain. The 'value chain' as a concept and these categories are defined in the *Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard* which includes this overview of the scopes and emissions across the value chain⁷.

⁵ Note: the combination takes place by calculation of the Global Warming Potential (GWP) of each gas, as set out in IPCC research. For more, see https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf

⁶ Source: Figure 2: Science Based Targets: SBTI Corporate Net-Zero Standard (Oct 2021): <https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf>

⁷ GHG Protocol: A Corporate Accounting and Reporting Standard: <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

The value chain is defined as: “... all of the upstream and downstream activities associated with the operations of the reporting company, including the use of sold products by consumers and the end-of-life treatment of sold products after consumer use”. The following diagram from the GHG Protocol⁸ illustrates this concept in the context of Scope 1, 2 or 3 emissions:



- **Scope 1:** direct emissions from owned or controlled sources
- **Scope 2:** indirect emissions from the generation of purchased energy consumed
- **Scope 3:** all other indirect emissions that occur in a company’s value chain

It is important to differentiate the notion of Net Zero from carbon neutral. Organisations which call themselves carbon neutral typically have taken steps to reduce their CO₂ emissions. Typically they will cut down their CO₂ emissions as much as possible first, before investing in highly-visible offset programmes. Net Zero goes much further by consider all GHG (not just CO₂) and requires not just reduction but also remove of GHGs in order to limit global warming.

Sector level Net Zero and pathways

The term ‘pathways’ of often used in consideration of how individual companies or sectors can get to Net Zero. One definition of this term is in the *PAII Net Zero Investment Framework*⁹:

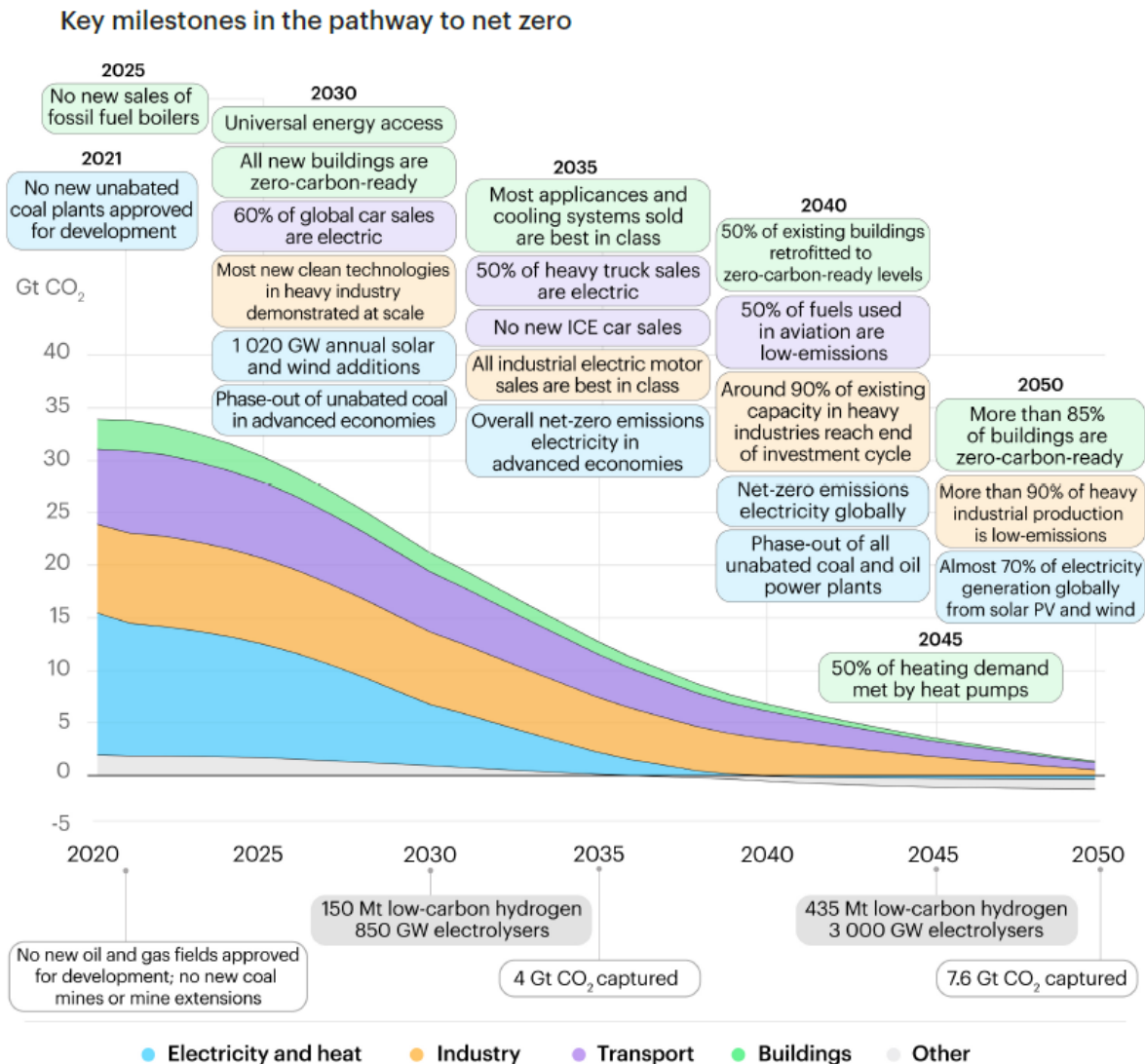
“Pathways is the term used to describe the emissions, technologies and investment trajectories that will be needed to deliver net zero.”

Pathways can refer to a series of actions which will be taken by a firm or sector, such as the example below from the *International Energy Agency’s ‘Net Zero by 2050’* roadmap, illustrates a pathway for

⁸ Corporate Value Chain (Scope 3) Accounting and Reporting Standard: https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporting-Standard_041613_2.pdf

⁹ https://www.parisalignedinvestment.org/media/2021/03/PAII-Net-Zero-Investment-Framework_Implementation-Guide.pdf

the global energy sector¹⁰. Each coloured box illustrates steps along the pathway at each point which are consistent with achieving Net Zero.



Pathways are often used in the context of sectors to acknowledge that different sectors are expected to reach Net Zero at different times due to each sector's access to decarbonisation technologies (technologies required for some sectors to decarbonise are unproven or do not yet exist in scalable forms). For example, the IEA's roadmap referred to above states that Net Zero by 2050 will require "nothing less than a complete transformation of how we produce, transport and consume energy" and that achieving this will require a managed decline in the use of fossil fuels. In investment terms, this means no new investment in new fossil fuel supply or projects beyond those already committed by 2021.

The term 'pathways' in this context refers to assessing whether a particular company or sector's planned actions are aligned with Net Zero¹¹. Various modelling tools have evolved to undertake this sort of assessment and they typically measure the impact of a company or sector's current pathway, providing a view as to whether it is aligned with a goal of limited global warming to 1.5 degrees

¹⁰ https://iea.blob.core.windows.net/assets/7ebafc81-74ed-412b-9c60-5cc32c8396e4/NetZeroby2050-ARoadmapfortheGlobalEnergySector-SummaryforPolicyMakers_CORR.pdf

¹¹ It is also worth noting that the term 'pathways' can also refer to the type of climate change modelling undertaken by organisations like the IPCC, i.e. in the context of consideration of various scenarios to examine alternative future climate conditions and climate policy pathways. In this context, pathways typically refer to the choices and actions taken to address climate change, with modelling used to measure the impact of these scenarios.

Celsius. The *Transition Pathway Initiative*¹² is an example of this sort of assessment methodology, which projects companies' decarbonisation efforts against the decarbonisation pathway for their associated sector, and many others exist.

Transition plans

One final key concept is that of a 'transition plan', defined as an organisation's plan to contribute to and prepare for a rapid global transition towards a low GHG-emissions economy. The UK government's Transition Plan Taskforce¹³ recommends that a good practice transition plan should cover:

- a. an entity's high-level ambitions to mitigate, manage and respond to the changing climate and to leverage opportunities of the transition to a low GHG and climate resilient economy. This includes GHG reduction targets (e.g. a Net Zero commitment)
- b. short-, medium- and long-term actions the entity plans to take to achieve its strategic ambition, alongside details on how those steps will be financed;
- c. governance and accountability mechanisms that support delivery of the plan and robust periodic reporting; and
- d. measures to address material risks to, and leverage opportunities for, the natural environment and stakeholders such as the workforce, supply chains, communities or customers which arise as part of these actions.

GFANZ have also recently published¹⁴ recommendations on financial institution net zero transition plans. Their report sets out their view on why Net Zero transition plans for organisations like asset owners and asset managers are essential to finance and enable the transition in the real economy. They also identify four key financing strategies which can be supported by Net Zero transition plan:



¹² <https://www.transitionpathwayinitiative.org/>

¹³ Source: TPT Implementation Guidance, Nov 2022 (<https://transitiontaskforce.net/wp-content/uploads/2022/11/TPT-Implementation-Guidance-1.pdf>)

¹⁴ <https://assets.bbhub.io/company/sites/63/2022/09/Recommendations-and-Guidance-on-Financial-Institution-Net-zero-Transition-Plans-November-2022.pdf>

Carbon offsetting and climate solutions

Carbon 'offsetting' also plays a role in how many companies plan to get to Net Zero¹⁵. The two main ways companies can do so are:

- Reducing GHG emissions outside of their value chain (also known as 'compensation')
- Removing carbon from the atmosphere within or beyond their value chain (also known as 'neutralisation')

Offsetting can be used by companies in two ways:

- To compensate or neutralise emissions that are still being released into the atmosphere while they transition towards a state of Net Zero emissions
- To neutralise residual emissions that cannot be eliminated from their value chain

It is worth noting that the SBTi best practice guidance is to only use offsets for 'hard to abate' sectors (i.e. where reducing GHG emissions is very difficult) and not as a replacement for taking action. One practical reason for this is the limited availability of offsets. This is also codified in initiatives such as the *Oxford Offsetting Principles*¹⁶, which set out that emissions reduction should be prioritised before carbon offsetting, and that offsets should be long term and of high quality.

Offsetting is typically achieved through 'climate solutions', either technological or 'nature-based' solutions which result in either a reduction or removal of GHGs from the atmosphere.

Examples of technology solutions to reduce GHGs include renewable energy and changes to manufacturing processes such as resource and energy efficiency improvements including reducing landfill, sustainable transport and associated infrastructure. Significant solutions are evolving in the food market too, including moving away from meat, regenerative agriculture and vertical food production farms.

Other carbon specific technologies include 'carbon capture, utilisation and storage' (CCUS), a way of reducing carbon emissions from industrial processes. Technology to remove GHG is also being developed, such as direct air capture (DAC). It is important to note that while technologies such as CCUS are emerging, they are not available at scale and in some cases are unproven. This further strengthens the case for focusing on reducing rather than compensating for GHG emissions.

Nature-based solutions to remove GHGs include land restoration, reforestation / planting of new trees and restoring coastal wetlands. Land and ocean-based solutions are also referred to as 'carbon sinks', as they naturally absorb GHGs.

One way in which offsetting works in practice is through the use of 'carbon offset credits'¹⁷, transferrable instruments certified by governments or independent certification bodies to represent an emission reduction of one metric tonne of CO₂, or an equivalent amount of other GHGs. The purchaser of an offset credit can "retire" it to claim the underlying reduction towards their own GHG reduction goals. Carbon offset credits are largely 'voluntary' at the current time, with variation in levels of certification and eligibility for their usage across different jurisdictions.

¹⁵ Offsetting explanation based on definitions in Science Based Targets (SBT): Foundations for Science-Based Net-Zero Target Setting in the Corporate Sector: (<https://sciencebasedtargets.org/resources/files/foundations-for-net-zero-full-paper.pdf>)

¹⁶ <https://www.smithschool.ox.ac.uk/research/oxford-offsetting-principles>

¹⁷ <https://www.offsetguide.org/understanding-carbon-offsets/what-is-a-carbon-offset/>

What is Net Zero investing?

Achieving Net Zero requires individual companies (and countries) to take steps to reduce and remove emissions. It also requires investment in climate solutions, both technological and nature-based.

At its simplest level, a Net Zero portfolio would be made up of underlying investments in companies and countries which are themselves Net Zero (either individually or in aggregate).

Investors have an opportunity to influence companies and countries by virtue of providing them with capital, i.e. investing money in them through ownership stakes (i.e. holding 'equity' positions) and lending to them (e.g. making direct loans or buying corporate or government bonds).

The two main types of investors are asset owners (e.g. pension funds, insurance companies, sovereign wealth funds) and asset managers (who typically invest on behalf of asset owners and other investors, such as retail investors who hold mutual funds).

What can investors do?

Investors can exercise their influence through:

Choice of investment	<ul style="list-style-type: none">• Choosing to invest in companies (and countries) which are taking action to achieve Net Zero• Providing capital to companies which are developing and providing climate solutions• Not allocating capital to companies (and countries) which are not taking action to achieve Net Zero ('disinvestment' or 'exclusion')
Engagement with investee firms	<ul style="list-style-type: none">• Using their position as an investor to engage with firms to encourage them to take action to achieve Net Zero (including using their vote where they hold equity positions to support this).
Engagement with policymakers	<ul style="list-style-type: none">• Engaging with governments and international organisations to develop and support Net Zero initiatives and policies

Investor organisations are typically financial institutions and they can and should be taking action to achieve Net Zero themselves. The GHG emissions directly generated by financial institutions are relatively small (usually concentrated in the building and transport used in their operations) compared with relatively higher GHG emissions in industries which manufacture goods and other services.

This means that financial institutions typically have relatively low scope 1 and scope 2 emissions, but they have much higher scope 3 or 'financed emissions'. This refers to the fact that by providing finance to companies (and countries), the resulting GHG emissions which arise are considered to be part of the financial institutions' emissions, albeit an 'indirect' part.

Focus on financed emissions

Both asset owners and asset managers can exercise considerable influence on the level of financed emissions in their investment portfolios (within any limits set by their investment objectives). This includes actions such as:

Choice of which asset classes and individual investments to:

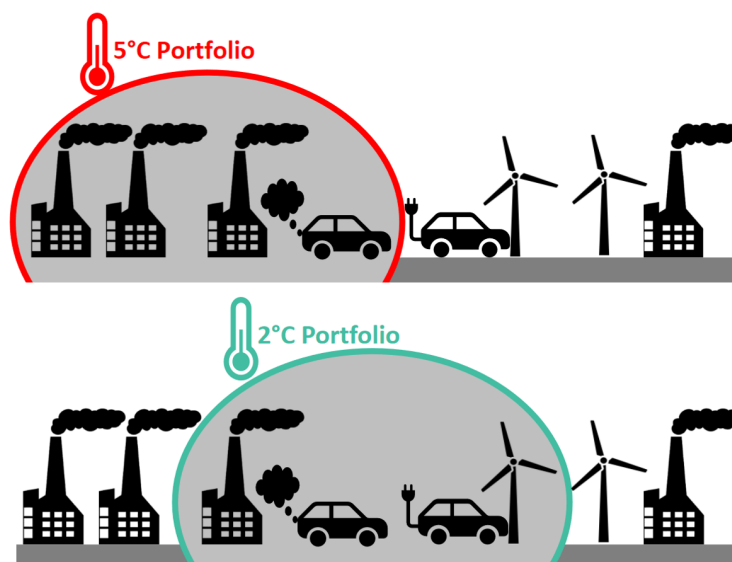
- **Include in portfolios:** Increasing investment in countries, sectors, companies (and with asset managers) who are Net Zero aligned and who promote a just transition to a Net Zero world (note: the notion of a ‘just transition’ is explained in the “Ambition and Commitments” section, below).
- **Exclude from portfolios:** Divesting from or excluding holdings in countries, sectors and companies which continue to fall short of having credible pathways to reduce emissions and are not willing to engage in any suitable manner.

Engagement and external collaboration:

- Engaging with policy makers, asset managers, banks, companies and other stakeholders within their spheres of influence, to promote Net Zero aligned initiatives at all levels.

The role of governments is critical to address the impact of climate change given their ability to set policy and to drive outcomes through legislation and enforcement.

It is important to note that divestment and exclusion is not a credible strategy to achieve real world emissions reduction. This is for the practical reason that ‘relative’ reductions in emissions of one investor’s portfolio do not remove them from the aggregate emissions of all portfolios. Divesting also results in the investor losing the opportunity to further engage and influence. This concept is neatly illustrated in this diagram¹⁸:



Role of climate change scenario analysis

Climate change scenarios are used to inform decision-making, allowing for consideration of the uncertain impacts of climate change on the future. These models have proved to be very effective to help policy makers and businesses to identify risks and opportunities from climate change, as well as helping organisations like the IPCC to make the case for action at a macro level to address global warming.

At a micro level, regulators are increasingly expecting financial institutions and other companies to embed climate risk analysis into all their decision making. This includes the way that models are used

¹⁸ Source: ‘Why “aligning with climate goals” doesn’t equate to “contributing” to them’ (<https://2degrees-investing.org/blogs/aligning-with-climate-goals-vs-contributing/>)

by asset owners and asset managers to design investment portfolios and to select individual investments.

It is therefore worth being aware of the potential for climate change scenarios to complement the Net Zero investing approaches outlined above. This could include using these models to stress test how portfolios of investments might perform in different climate change scenarios.

Net Zero initiatives

A large number of organisations and initiatives have emerged in recent years to promote the idea of Net Zero investing as well as to support financial institutions along their journey.

These initiatives build on the high level goals of the 2015 Paris Agreement, by providing methodologies and tools to help asset owners address practical questions such as:

- What does a commitment to Net Zero investment actually mean in practice?
- How does one measure whether a portfolio is Net Zero?
- How are interim targets over the journey to Net Zero determined?
- What actions can be taken to meet those targets?

The following table introduces a number of key organisations involved in Net Zero investing – please note that many others also feature and we include further detail in Appendix 1 (including a framework to put these organisations and initiatives into the context of an investor’s journey to implementing Net Zero investing).

Initiative	Description
UNEP FI (United Nations Environment Programme Finance Initiative) and UN Global Compact	UNEP FI: aims to bring together a large network of banks, insurers and investors that collectively catalyses action across the financial system to deliver more sustainable global economies. UN Global Compact: is a policy platform and a practical framework for companies that are committed to sustainability and responsible business practices.
PRI (Principles for Responsible Investment)	Works to understand the investment implications of environmental, social and governance (ESG) factors. Also aims to support its international network of investor signatories in incorporating these factors into their investment and ownership decisions. Previously known as ‘UN PRI’ to reflect partnership with United Nations initiatives like UNEP FI.
GFANZ (Glasgow Financial Alliance for Net Zero)	Aims to expand the number of net zero-committed financial institutions and to establish a forum for addressing sector-wide challenges associated with the Net Zero transition, helping to ensure high levels of ambition are met with credible action. Also acts as an ‘umbrella’ organisation for various sub-sector specific initiatives like NZAMI, PAII etc.
IIGCC (Institutional Investors Group on Climate Change)	European membership body for investor collaboration on climate change. Equivalent bodies elsewhere include AIGCC, Ceres, IGCC and these bodies often collaborate (see Appendix 1 for more details and definitions)
NZAMI (Net Zero Asset Managers Initiative)	International group of asset managers committed to supporting the goal of net zero greenhouse gas emissions by 2050 or sooner,

Initiative	Description
TCFD (Task Force on Climate-related Financial Disclosures)	The TCFD has developed a framework to help public companies and other organizations more effectively disclose climate-related risks and opportunities through their existing reporting processes.

When it comes to practical frameworks for implementing Net Zero investing, there are three key organisations and frameworks to note (see Further Reading section for links for more information):

Organisation	Framework	Description
NZAOA (Net Zero Asset Owners Alliance)	Target Setting Protocol	UN-convened Net Zero Asset Owner Alliance (NZAOA) is a member-led initiative of institutional investors committed to transitioning their investment portfolios to Net Zero GHG emissions by 2050. The Target Setting Protocol sets out the Alliance’s approach to individual member and collective target setting and reporting.
PAII (Paris Aligned Investing Initiative)	Net Zero Investment Framework	The Paris Aligned Investment Initiative is a collaborative investor-led global forum enabling investors to align their portfolios and activities to the goals of the Paris Agreement. The Net Zero Investment Framework is designed to provide a basis on which a broad range of investors can make commitments to achieving net zero emissions and define strategies, measure alignment, and transition portfolios.
SBTi (Science Based Targets initiative)	Framework for financial institutions	SBTi is a Partnership which drives ambitious climate action in the private sector by enabling organisations to set science-based emissions reduction targets. SBTi framework for financial institutions aims to support financial institutions in their efforts to address climate change by providing resources for science-based target setting.

The rest of this report is focused on exploring some of the common themes in these three frameworks, with the aim of helping someone new to this world understand what is required along the journey to building a Net Zero investment portfolio.

While there is much in common across the three frameworks, they do include nuances relevant to their particular target audience. In particular, the NZAOA Target Setting Protocol and PAII Net Zero Investment Framework are more relevant to asset owners vs. the SBTi Framework which is broader and is applicable to banks, asset owners and asset managers.

Alongside the development of Net Zero frameworks, we have also seen a number of government and regulatory initiatives requiring asset owners and asset managers to consider the financial risk of climate change to their assets and investments (e.g. from the FCA, PRA and DWP). The TCFD framework is a key initiative which sets out how companies should disclose climate-related risks and opportunities.

The TCFD framework requires disclosure across four pillars: governance, strategy, risk management and metrics & targets. It has become a popular mechanism through which UK regulators are seeking to understand the financial risks due to climate change and TCFD disclosures are increasingly becoming mandatory for many types of organisation.

We have not sought to cover the details of initiatives like TCFD or other related initiatives setting standards for how broader sustainability disclosures should be made (such as those led by the International Sustainability Standards Board). Information on these initiatives is widely available.

Ambition and commitments

The starting point in all three frameworks is making a commitment to achieve a Net Zero portfolio GHG emissions by 2050. The PAII framework also includes a commitment to increase investment in the range of ‘climate solutions’ needed to meet this goal.

A wide range of asset classes are included in the scope of this commitment, including public (listed) and private equity, corporate and consumer loans, corporate and government (sovereign) bonds, real estate and infrastructure. Note: there are some differences between the frameworks (e.g. NZAOA does not currently include government bonds, but they launched a consultation on target setting for this asset class in Oct 2020¹⁹).

All of the frameworks require investors to consider Scope 1, 2 and 3 emissions of investments within portfolios, with allowances for the limited availability of data for some asset classes (e.g. scope 3 data may be limited, but targets are still encouraged wherever possible).

Net Zero investment approaches often include a commitment to the ‘just transition’. This is a concept first introduced in the Paris Agreement and which ensure that the substantial benefits of action on climate change are shared widely by creating high-quality jobs in accordance with nationally defined development priorities, while supporting those who stand to lose. For example, the SBTi FI framework notes that effective coal phaseout requires consideration of a just transition to ensure viability and long-term stability, especially for low income and lower-middle economies.

Engaging with companies, industries and governments on how they are taking action to achieve Net Zero is a key requirement of all the frameworks. This includes having dialogue with the companies (and governments) in which portfolios are invested, including using voting powers (where relevant) to influence strategy to reduce or remove GHG emissions (and/or to develop climate solutions).

It is worth noting that the depth and breadth of commitments required to achieve Net Zero are constantly evolving to cover more and more asset classes and emission scopes as well as calling for deeper reductions in the short term. This was highlighted recently in a report highlighting significant improvements required to “prevent dishonest climate accounting and other actions designed to circumvent the need for deep decarbonization”, also known as ‘greenwashing’²⁰.

Targets and metrics

The Net Zero frameworks require investors to set clear, science-based targets at the portfolio and the asset class level. The specific details vary between the frameworks but the common themes include:

- Near-term (5-10 year) targets to reduce CO₂e emissions at a portfolio level, with a focus on absolute levels of CO₂e or carbon intensity (the volume of carbon emissions associated with a portfolio per \$m of revenue)
- Longer term (>10 year) targets to increase the percentage of asset class and/or sector exposure to firms which are achieving or on pathways to achieve Net Zero
- Engagement targets to focus on highest emitters in portfolios to encourage them to take action towards Net Zero

¹⁹ See here for more: <https://www.unepfi.org/themes/climate-change/net-zero-asset-owner-alliance-launches-public-consultation-on-third-edition-of-target-setting-protocol/>

²⁰ Report by the UN’s High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities – Nov 2022: https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf

- Targets to invest in climate solutions which support the transition to Net Zero
- Targets to neutralise residual GHG emissions that cannot be cut at this time via carbon removal strategies

A number of different metrics are used to measure whether an investment or portfolio of investments are aligned with a target, including the following:

Metric	Unit	Description
Carbon footprint	tCO2e/ \$m invested	The total carbon emissions associated with a portfolio normalized by market value. Metric depends on the scope of assessment employed, and the methods used to calculate emissions at portfolio levels.
Carbon intensity	tCO2e/ \$m revenue	Volume of carbon emissions per million dollars of revenue (i.e. the carbon efficiency of an investment)
Weighted Average Carbon Intensity	tCO2e/ \$m revenue	Portfolio's exposure to carbon-intensive companies, weighted by the proportion of each investment in the portfolio
Total carbon emissions	tCO2e	The absolute GHG emissions associated with a portfolio, includes Scope 1, 2 and 3 emissions.
Portfolio-implied temperature	Degrees C by 2050 or 2100	Estimate the level of future warming with which a portfolio is currently aligned, on the basis of forecasting emissions intensities to a specific date (e.g., 2030) and then extrapolating future temperature outcomes by 2100.

Governance, monitoring and disclosures

Governance plays a key role in implementing a Net Zero investment approach, and the frameworks require a high level of commitment from organisations adopting this ambition including:

- Board/CEO level commitment to a Net Zero goal, including acceptance of responsibility for implementation (including setting and reporting on achievement of targets) and allocating appropriate resources
- Clear oversight of Net Zero activities and incentive schemes (including executive remuneration) linked to delivering targets

All of the frameworks require publication of a clear action plan and targets, as well as periodic publications of progress against these targets (including details of engagement activity with investee firms).

Some of the frameworks require reporting of progress in a standardised way and/or through data platforms such as the CDP climate change annual questionnaire. The reporting templates are typically aligned with the TCFD reporting standard and cover the following four areas. The example below is an illustration of what might be included in a TCFD report:

Governance	<ol style="list-style-type: none"> 1. Board level commitment to achieve Net Zero by 2050 or earlier 2. Climate related objectives incorporated into asset manager mandates
Strategy	<ol style="list-style-type: none"> 1. Disclosure on how key climate metrics are considered in the strategic asset allocation (SAA) to reduce emissions in the medium term 2. SAA optimisation for emission and climate metrics
Metrics and Targets	<ol style="list-style-type: none"> 1. Targets and performance against targets over time 2. The science based scenarios relied on when setting targets 3. Methodology applied for alignment of assets
Management	<ol style="list-style-type: none"> 1. Net Zero portfolio construction and Net Zero products launched 2. Engagement, disinvestments and voting records. Respective policies to be published and policy deviations to be noted.

Case studies

The following case studies are drawn from publicly available information and aim to demonstrate how Net Zero investing can be implemented in practice.

AXA Case Study²¹

AXA is a French multinational insurance company with assets of over €800 billion. It operates primarily in five hubs: France, Europe, Asia, AXA XL and International (including Middle East, Latin America and Africa). AXA has five operating activities: Life & Savings, Property & Casualty, Health, Asset Management and Banking.

Ambition and commitments

In 2019, AXA committed to align its portfolio investments with the Paris Agreement, thereby committing to a +1.5°C world by 2050.

AXA is also part of the Net Zero Asset Owner's Alliance (NZAOA) and coordinates the NZAOA's "Portfolio Alignment" working group, which encourages methodology convergence for portfolio alignment and monitoring.

Targets

AXA promotes portfolio alignment with the goals of the Paris Agreement based on the concept of portfolio "investment temperature". Its current climate strategy includes the following targets (amongst others) based on developments in 2020/21:

1. Capping the "Warming Potential" of their investments under +1.5°C by 2050;
2. This long-term target is complemented, since December 2020, by a -20% investment related carbon footprint target between 2019 and 2025;
3. A green investment target of €24bn by 2023, increased to €25bn following a €1bn Green Bond issuance by AXA SA in 2021;

²¹ This case study is based on information included in the AXA 2021 Climate Report: https://www-axa-com.cdn.axa-content-118412.eu/www-axa-com/db5d9f4b-4bb9-4029-ad51-b9e0e20301fb_2021_Climate_Report.pdf

4. The launch of the “Transition Bond” asset class, with AXA IM investing in a first €100m issuance by Crédit Agricole CIB in 2019 and a second one by BPCE in 2020;
5. A medium-term total exit from the coal industry backed by strict investment and underwriting restrictions, as well as on other carbon-intensive industries;
6. A target to achieve carbon neutrality in AXA’s operations and reduce their direct environmental footprint by 2025;

AXA has focused on reducing both current emissions in the portfolio but also helping to finance the real-world transition to low-carbon technologies in the real economy.

Measures

To understand the impact of investments on climate change, there is need to identify metrics that help understand the transition. Carbon foot-printing, while useful as a tool to understand current day emissions, provides little information regarding where emissions are heading. Therefore, there is a need for forward-looking metrics in order to chart the path forward.

AXA does this through the use of temperature alignment metrics. Temperature alignment metrics provide a forward-looking understanding of the potential impacts of companies and sectors on the dynamics of climate change. They can be used to set dynamic climate targets and develop related strategies, thereby accelerating “real-world impact” in terms of climate mitigation.

AXA has leveraged a “transition risk” model developed with Carbon Delta (now acquired by MSCI), which produces the “Warming Potential” (WP) metric expressed in terms of temperature. The modelling approach combines top-down data and bottom-up economic and company data to establish a forward-looking climate-related set of metrics. This complements carbon-footprinting (or carbon intensity) and other metrics.

The table below provides an overview of the metrics that AXA currently measures:

Metric Type		Asset Class	Data Provider	What is measured?
Warming Potential		Sovereign Debt	Beyond Ratings	Contribution to global warming, expressed in °C
		Corporate Bonds & Equity	MSCI (Carbon Delta)	Contribution to global warming, expressed in °C
Climate Value At Risk	Physical risk costs	Corporate Bonds & Equity	MSCI (Carbon Delta)	Impact of extreme weather events (asset damages and business interruption), expressed in % of Enterprise Value (EV)
		Real Assets	AXA Group Risk Management	Building-level impacts of extreme weather events, expressed in €m
	Transition risk costs	Corporate Bonds & Equity	MSCI (Carbon Delta)	Impact of CO2 emissions reduction, expressed in % of Enterprise Value (EV)
	Technological opportunities	Corporate Bonds & Equity	MSCI (Carbon Delta)	Revenues related to technological opportunities (green revenues & patents), expressed in & patents), expressed in % of Enterprise Value (EV)
Green Share		Sovereign Debt	Beyond Ratings	Share of low-carbon energy in primary energy use (hydropower, wind, solar, geothermal, tidal, nuclear)
		Corporate Bonds & Equity	Trucost ESG Analysis (S&P Global)	Green revenues, expressed in % of revenues
Carbon Footprint		Sovereign Debt	The World Bank	Carbon footprint of AXA's portfolios expressed in T.eq.CO2 /\$m of revenues (corporates) or GDP (sovereigns).
		Corporate Bonds & Equity	Trucost ESG Analysis (S&P Global)	
		Real Assets	AXA Investment Managers	EV-based carbon footprint of AXA's portfolio, expressed in T.eq.CO2 /EV €m (normalized per Enterprise Value)
		Corp. Bonds & Equity (excl. financials)	Trucost ESG Analysis (S&P Global)	
		Corp. Bonds & Equity (incl. financials)	Trucost ESG Analysis (S&P Global)	

Disclosures

AXA publishes an annual Climate Report as well as providing voluntary reporting on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). The Climate Report describes AXA's responsible investment and insurance initiatives and measures the Group's progress in its ambition to reach the objectives of the Paris Agreement.

Among the various indicators measuring AXA's activities with regard to climate change, this report highlights the "warming potential" methodology, which measures the impact of the Group's investments on global warming by 2050. In 2021, it stood at 2.7°C, significantly below the market, whose potential is 3.2°C. This is a key indicator for AXA, which committed to limiting the warming potential of its investments to 1.5°C by 2050.

Tools

While many stakeholders expect the finance industry to embrace the concept of "Paris-aligned investments", the answers so far as to what this means have taken various shapes, such as carbon foot-printing (which is not forward-looking), divestments (which only focus on the most carbon-intensive sectors), green investments (which are challenging to bring to scale and often overlook "transition" sectors) or shareholder engagement (with results that are sometimes difficult to measure).

Investors are turning more now towards new types of analyses and corresponding metrics that seek to complement these efforts, while also presenting a more insightful response into what it means to be a "Paris-aligned" investor – and notably factoring in Nationally Determined Commitments or NDCs²². NDCs are a product of the Paris Agreement and considered critical to achievement of its long-term goals. They efforts by each country to reduce national emissions and adapt to the impacts of climate change.

"Warming Potential" methodology applied to Corporate Equity and Debt

As mentioned before, since 2018, AXA has leveraged a "transition risk" model developed with Carbon Delta, which produces the "Warming Potential" (WP) metric expressed in terms of temperature. Its modelling approach combines top-down data and bottom-up economic and company data to establish a forward-looking climate-related set of metrics for AXA's corporate equity and bond portfolio.

One of the key features of the AXA approach is to correlate macro level "carbon budgets" (describing carbon emissions and sinks at the global level) with companies (as individual carbon emitters) depending on their geographic footprint and sector as well as business mix. This "temperature" concept provides a measure of the gap between future carbon pledges and science-based emissions budget still available before global warming increases. Using this approach has allowed AXA to develop a more balanced "Warming Potential" approach considering both companies' absolute and sector-relative contributions to global warming.

This deliberate methodological choice factors both the sectors' relative contributions to climate mitigation as well as individual companies' best practices within their respective industries to curb carbon emissions.

"Warming Potential" methodology applied to Sovereign Debt

AXA evaluates the "Warming Potential" of its Sovereign Debt assets using a different climate data partner (Beyond Ratings, acquired by the London Stock Exchange in 2019), which has developed a dedicated expertise in this field.

Similar to the approach by Carbon Delta MSCI, Beyond Ratings compares the future carbon abatement commitments that Governments made towards the Paris Agreement's "carbon budget", associating a theoretical temperature to national carbon pledges. Beyond Ratings has developed an

²² Source: https://www-axa-com.cdn.axa-contento-118412.eu/www-axa-com/db5d9f4b-4bb9-4029-ad51-b9e0e20301fb_2021_Climate_Report.pdf

approach inferring “2°C” compliant carbon budgets by countries by relying on the so-called “Kaya relationship” between Greenhouse Gas (GHG) emissions, GDP growth, demographics, energy efficiency and carbon intensity.

$$\frac{GHG\ emissions}{Population} = \frac{GDP}{Population} \times \frac{Energy}{GDP} \times \frac{GHG\ emissions}{Energy}$$

It uses the NDCs that have been expressed in the Paris Agreement to build a homogeneous allocation of CO2 emissions reduction commitments by countries by 2030. Country level carbon intensities are then compared to the 2°C compliant carbon intensities. More generally, using the theoretical linear relationship between carbon emissions and temperature rise, Beyond Ratings defines a corresponding temperature based on country-level 2030 carbon commitment intensities.

Based on this model, the “Warming Potential” of AXA’s Sovereign Debt in 2020 reached 2.3°C (broadly flat vs. 2019, and slightly below 2018 at 2.4°C), while their benchmark also remained flat but at the much higher value of 3°C. This is due to their significant exposure to French Government debt (25% of AXA’s government debt exposure vs. a benchmark of 8%), which has a low temperature score (1.9°C), mainly due to the country’s low carbon energy mix (essentially nuclear and hydro power), and to their investments in the European Union countries, in general, which have lower temperatures than the U.S., itself over-weighted in the benchmark.

Green Share/Contribution to the Energy Transition

In addition to the “temperature-type” metrics as noted above, portfolio alignment can also be measured as the contribution to the energy transition from two angles:

- Project-led green share: This is the measure of how much of the share of green projects a firm has contributed to. Here, you can consider how much a firm has invested in green bonds, green buildings and green infrastructure.
- Share of green revenues from listed holdings: This is the measure of the value-weighted average share of green revenues of issuers in one’s portfolio. This metric measures – all things equal – the “level of greenness” of investments.

AXA measures the “Warming Potential” of its investments but also estimates carbon intensity measures and the % of green revenues as noted in the table in section 9a.3 to provide a comparable snapshot of its investments.

*Monitoring & Governance*²³

In 2020, AXA created an internal structure to accelerate its ability to leverage its business model to respond to societal issues, with a strong focus on climate-related considerations. Thus, a new “Role in Society” Steering Committee (RISSC) was formed. The RISSC is co-chaired by the Group Chief Risk & Investment Officer and the Group Chief Communication, Brand and Sustainability Officer with the purpose of steering AXA’s role in society, for example, with regard to issues on climate, sustainability and inclusive insurance, and reviewing all related material investment, underwriting, risk, operational and policy issues faced by AXA.

The Responsible Investment Committee (RIC) reports to the Group Investment Committee and the RISSC while the RISSC reports to the Group Management Committee, which reports to the Board of Directors.

The authority of the RISSC covers all of AXA’s operations. RISSC members represent a wide range of functions, responsibilities and geographies. The RISSC meets on a quarterly basis and reports back to the Management Committee concerning material decisions taken and issues considered on which Management Committee guidance or decisions are needed.

²³ Source: https://www-axa-com.cdn.axa-contento-118412.eu/www-axa-com/db5d9f4b-4bb9-4029-ad51-b9e0e20301fb_2021_Climate_Report.pdf

BT Pension Scheme (BTPS) Case Study²⁴

The BT Pension Scheme (BTPS) is the largest corporate-sponsored pension scheme in the UK and one of the largest pension funds in Europe. The Scheme closed to new members in 2001 and to future accrual for most members in June 2018.

BT Pension Scheme Trustees Limited, a corporate trustee, holds ultimate fiduciary responsibility for the Scheme and its members. The trustee's key responsibility is to ensure that BTPS pays benefits as they fall due. The trustee's board has delegated responsibility for day-to-day management of BTPS to BT Pension Scheme Management Limited (BTPSM, a wholly owned subsidiary of BTPS), subject to on-going trustee board oversight.

Ambition and commitments

In September 2020, BTPS announced its climate change policy stating its ambitious goal to achieve Net Zero greenhouse gas emissions (in absolute scope 1-3 terms) by 2035 across its £55 billion portfolio. 2035 is notably well ahead of the 2050 timeline committed by the UK government. This is predominantly due to the relatively shorter term liabilities faced by the BTPS, with almost all scheme members expected to retire over the next 15 years.

BTPS first considered climate change risk as part of its investment strategy in 2007. Since then it has benefitted from engagement with institutions such as the Principles for Responsible Investment (PRI) and the Institutional Investors Group on Climate Change (IIGCC). Earlier in 2020, BTPS amended its core investment principle from "finance first" to "sustainable long-term value creation".

BTPS utilises the PAII Net Zero Investment Framework.

Targets (including asset classes in scope)

The BTPS 2035 Net Zero goal is overseen by its board of trustees and is underpinned by 5-yearly interim targets. These targets will be re-assessed every 3 years and annually tracked and reported through TCFD-aligned reporting. According to Victoria Barron, Head of Sustainable Investment at BTPS, the goals are set at different levels including:

1. Sub-portfolio level goals
2. Sectoral decarbonisation goals
3. Stewardship goals
4. Financing transition goals and
5. Advocacy goals

Over the next 5 years, BTPS aims to reduce emissions by 25-30% focusing on the heaviest emitting and most difficult to abate sectors. It is also focusing on the top 75% of emitters in their portfolio, working directly with both individual companies and asset managers to help drive change.

Measures

To achieve the Scheme's Net Zero goal, BTPS is focusing on four key areas:

1. Portfolio construction: Over the next 15 years, almost all BTPS members will be retired. As a result, the BTPS investment strategy will need to change to focus more heavily on investments that are safe with predictable income, such as bonds and secure income assets, to meet its

²⁴ This case study is based on information on the BTPS website and their 2021 annual report: <https://www.btps.co.uk/NewsDetail?a=39> and https://www.btps.co.uk/MediaArchive/SchemeSite/BTPS352_BTPS_Report_and%20Accounts_August2021_V17_30Sept.pdf

members' monthly pension payments. This creates a unique opportunity to make long term 'buy and hold' investments in companies that have lower emissions and to increase investments in low-carbon transition assets on a similar basis, with the benefit of reduced transaction costs over the lifetime of the asset.

2. **Mandates and managers:** BTPS will utilise its mandates with external managers, both old and new, to align them with the Scheme's ambition of Net Zero transition. It intends to select and retain managers that it believes can deliver the required investment performance and achieve their climate change targets. BTPS require managers to report against a Net Zero climate scorecard which will be assessed annually to review managers' performance. It is of the view that divestment will not help drive change to a low-carbon economy and so their aim is to work with companies and asset managers to bring about this change. However, if they don't see progress in the next 5 years, then they will look to divest.
3. **Stewardship:** BTPS plans to implement a revised voting policy reflecting its Net Zero objectives. All underlying investments will be required to make appropriate emissions disclosures and provide clear plans for reducing their emissions to Net Zero. Failure to engage or make sufficient efforts to curb emissions after a period of engagement is likely to result in divestment.
4. **Advocacy:** The final area of the four-pronged approach focuses on advocacy. BTPS intends to use its influence to advocate for Net Zero aligned policy from policymakers, regulators, governments, the investment industry and other stakeholders. According to BTPS, it will use its voice to encourage the creation of government funding programmes to mobilise investments in clean and resilient growth. Given the importance of accurate and timely data in achieving Net Zero goals, BTPS plans to work with index and data providers, ratings agencies and consultants to accelerate and improve climate change data and disclosures.

Although BTPS does not invest according to a weighted carbon intensity target it believes this measure helps to facilitate dialogue with investment managers on the risks and opportunities of climate change within their portfolios.

Disclosures

BTPS supports the recommendations made by TCFD, which aim to promote better disclosure of climate-related financial risks in order to improve understanding of the risks and opportunities of climate change.

In line with the TCFD framework, BTPS disclose details on their governance framework, strategy, risk management approach and metrics & targets in relation to climate-related risks in their annual report.

In 2021, BTPS also became a signatory to the Financial Reporting Council's "UK Stewardship Code 2020" which is a voluntary code for asset managers, asset owners and service providers.

Stewardship is the responsible allocation, management and oversight of capital to create long-term value for clients and beneficiaries leading to sustainable benefits for the economy, the environment and society.

The Stewardship Code comprises of a set of 12 'apply and explain' principles for asset managers and asset owners, and a separate set of six principles for service providers. It sets high stewardship standards for those investing money on behalf of UK savers and pensioners, and those that support them. BTPS published its inaugural Responsible Investment and Stewardship Report in 2021. The report aims to explain their responsible investment policy in more detail, showcase how they conduct stewardship and demonstrate how they evaluate themselves and their plans for the future including compliance with the Stewardship Code.

Monitoring & governance

The BTPS trustee board has ultimate authority for all aspects of the scheme's management and strategy. The BTPS 2035 Net Zero goal is also overseen by the trustee and the responsibility for monitoring climate-related risks has been delegated to the boards' investment committee.

BTPS has reported that each year its trustee will undertake a 'deep-dive' to ensure their climate and carbon risk management process remains fit for purpose, and to incorporate any developments in best practice.

The implementation of the Net Zero strategy is overseen by the BTPSM executive committee and the day-to-day integration of BTPS' considerations is done by a Net Zero Working Group, made up of investment team members.

Further reading

NZAOA Target Setting Protocol:

<https://www.unepfi.org/net-zero-alliance/resources/target-setting-protocol-second-edition/>

PAII Net Zero Investment Framework:

<https://www.iigcc.org/resource/net-zero-investment-framework-implementation-guide/>

SBTi financial sector science-based targets guidance:

<https://sciencebasedtargets.org/resources/files/SBTi-Finance-Net-Zero-Foundations-paper.pdf>

<https://sciencebasedtargets.org/resources/files/Financial-Sector-Science-Based-Targets-Guidance.pdf>

Net Zero Target-Setting Methodologies Demystified (State Street Global Advisers) - comparison of the three frameworks:

<https://www.ssga.com/library-content/pdfs/insights/net-zero-target-setting-methodologies-demystified.pdf>

GFANZ portfolio alignment report – Aug 2022:

<https://assets.bbhub.io/company/sites/63/2022/07/GFANZ-Portfolio-Alignment-Measurement-August2022.pdf>

Financial Reporting Council (FRC) Lab review of Net Zero Disclosures, Oct 2022:

<https://www.frc.org.uk/investors/frc-lab/net-zero-disclosures>

Climate Emergency – tipping the odds in our favour: A climate-change policy briefing for COP27

<https://actuaries.org.uk/media/gebdhxzi/climate-emergency-final-report.pdf>

The Science of Climate Change – Joint Forum for Actuarial Regulation (JFAR) paper:

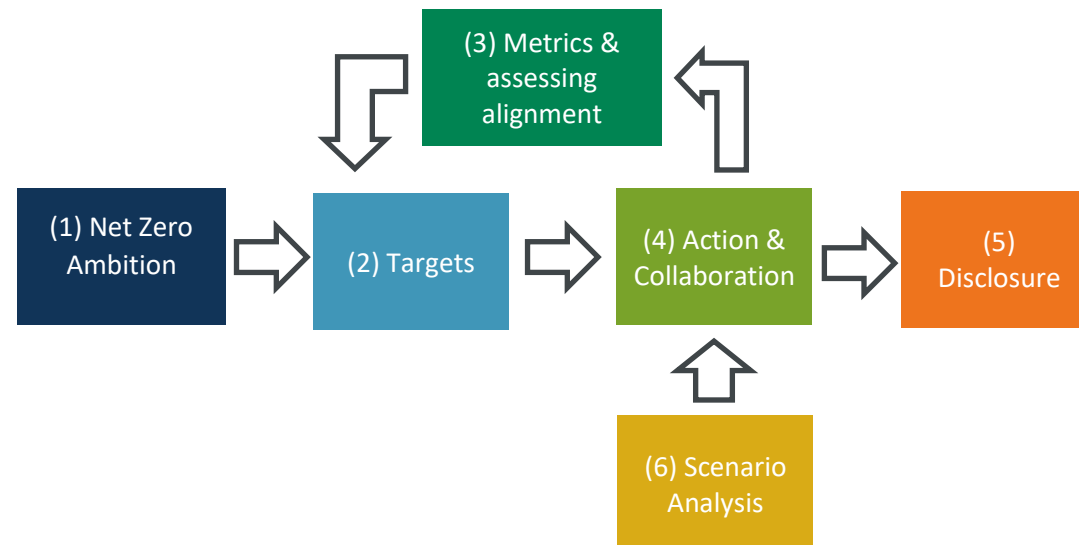
<https://www.frc.org.uk/getattachment/8679a6be-c91e-4441-a08e-ebf352070ae3/FRC-JFAR-Climate-Change-Deep-Dive-June-2022.pdf>

Appendix 1: Mapping organisations and initiatives

To help those new to Net Zero investing, we highlight below the key stages through which an asset owner or asset manager might progress on their Net Zero journey. We then map the various organisations and initiatives to these stages to help explain how they fit together and when one might want to use one of them.

The six stages are:

- (1) **Net Zero ambition:** the initial commitment to act and align an investment portfolio with Net Zero and the associated governance structures to monitor this
- (2) **Targets:** developing portfolio and sub-portfolio alignment targets, across multiple time-horizons.
- (3) **Metrics and assessing alignment:** how alignment is defined and measured, to quantify progress against the alignment targets.
- (4) **Action and collaboration:** the use of methodologies and collaborative initiatives to achieve change and make progress against the alignment targets.
- (5) **Disclosure:** the reporting of progress against alignment targets, possibly following defined standards/formats.
- (6) **Scenario analysis:** a related but not integral part of the Net Zero journey, included here given its growing importance for asset owners to assess and disclose their exposure to climate change risk.



The following tables²⁵ summarise how various initiatives, groups, methodologies and tools may be used by asset owners in their Net Zero journey, as defined on the previous page. There is a degree of subjectivity in this classification and we acknowledge that many initiatives touch multiple areas; however, our aim is to provide a view of the key areas of focus for each. We also acknowledge this list is by no means exhaustive.

It is important to become familiar with these organisations and initiatives as they feature prominently in Net Zero investing discussions. We start by introducing a number of high level organisations and initiatives:

Initiative	Description	(1) Net Zero Ambition	(2) Targets	(3) Metrics & assessing alignment	(4) Action & collaboration	(5) Disclosing	(6) Scenario Analysis
GFANZ: Glasgow Financial Alliance for Net Zero	Coordinated by UNEP, this is the umbrella alliance for the UN Race to Zero campaign including: PAll, NZAMI, NZAOA, NZBA and NZIA (forthcoming).						
NZBA: Net Zero Banking Alliance	Coordinated by UNEP, this is an industry-led alliance committed to aligning lending and investment portfolios with Net Zero emissions by 2050.						
NZIA: Net Zero Insurance Alliance	Coordinated by UNEP, this is a group of over 20 leading insurers committed to transitioning their underwriting portfolios to Net Zero emissions by 2050.						
NZAMI: Net Zero Asset Managers Initiative	Coordinated by CDP, PRI and the four regional investor networks (AIGCC, Ceres, IGCC, IIGCC), this is a group of asset managers.						
The Investor Agenda	Coordinated by UNEP and PRI, this is an initiative to provide investors a set of climate actions in investment, engagement, disclosure and advocacy.						

We refer to a number of organisations above who are involved in and/or sponsoring Net Zero initiatives:

- UNEP: the United Nations Environment Programme
- AIGCC: Asia Investor Group on Climate Change
- Ceres: North American organisation working with the most capital market leaders to solve the world’s greatest sustainability challenges

²⁵ Credit: this table is largely inspired by and reliant on information from [PCAF: Strategic Framework for Paris Alignment](#)

- IGCC: Investor Group on Climate Change (Australia and New Zealand)
- IIGCC: Institutional Investors Group on Climate Change (Europe)
- PRI: Principles for Responsible Investment (UN-supported international network of investors, works to promote sustainable investment through the incorporation of environmental, social and governance factors)

We then introduce three key initiatives relevant to asset owners which provide a framework for how to build and implement a Net Zero investment approach:

Initiative	Description	(1) Net Zero Ambition	(2) Targets	(3) Metrics & assessing alignment	(4) Action & collaboration	(5) Disclosing	(6) Scenario Analysis
NZAOA: Net Zero Asset Owners Alliance	Coordinated by UNEP and PRI, this is a group of institutional investors whose Target Setting Protocol is one of the key Net Zero frameworks.						
PAII: Paris Aligned Investing Initiative	Originally established by IIGCC, now supported by the four regional investor networks. Produces Net Zero Investment Framework for asset owners.						
SBTi-FI: Science Based Targets initiative framework for financial institutions	A project launched under the SBTi framework (see below) to provide a framework for financial institutions to align their lending and investment portfolios.						

Finally, we introduce a number of key initiatives which help organisations develop and implement Net Zero investing in practice, including those which provide targets and assessment methodologies or tools to quantify the level of emissions from investments:

Initiative	Description	(1) Net Zero Ambition	(2) Targets	(3) Metrics & assessing alignment	(4) Action & collaboration	(5) Disclosing	(6) Scenario Analysis
SBTi: Science Based Targets initiative	A collaboration between CDP, UNGC, WRI and WWF, established to help companies set emission reduction targets in line with climate science.						
CRREM: Carbon Risk Real Estate Monitor	A research and innovation project that defines science-based decarbonization pathways for the commercial and residential real estate sectors.						
Germanwatch Climate Change Performance Index	Evaluates and compares the climate protection performance of countries.						
Transition Pathways Initiative	A global, asset-owner led initiative that assesses companies' preparedness for the transition to a low carbon economy, based on publicly available information.						
CA100+: Climate Action 100+	An investor initiative to ensure the world's largest corporate GHG emitters take necessary action on climate change. Measures alignment and supports engagement.						
ClimateWise	A network of insurance industry organisations committed to responding to climate change's risks and opportunities.						
PCAF: Partnership for Carbon Accounting Financials	Carbon accounting methodology for financial institutions to measure and disclose the GHG emissions associated with lending and investment activities.						
TCFD: Task Force on Climate-Related Financial Disclosures	Established by the G20 Financial Stability Board. The TCFD recommendations establish consistent disclosures about the risks and opportunities presented by climate change to be used by companies, asset managers and asset owners in their mainstream financial filings.						

Initiative	Description	(1) Net Zero Ambition	(2) Targets	(3) Metrics & assessing alignment	(4) Action & collaboration	(5) Disclosing	(6) Scenario Analysis
CDP (previously the Carbon Disclosure Project)	CDP runs a global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts, setting a standard for environmental reporting with a comprehensive dataset on corporate and city action.						
2dii: 2 Degrees Investing Initiative – Paris Agreement Capital Transition Assessment (PACTA)	A framework to measure alignment of financial markets with climate goals and scenarios with a 5-year time horizon.						

The chart below summarises some of the key milestones in the IPCC’s work leading up to their Special Report on Global Warming of 1.5 degrees Celsius (from: https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Chapter_1_HR.pdf)

