



A GUIDE TO CLIMATE RESILIENCE STRATEGIES FOR COMMERCIAL REAL ESTATE

Supporting BBP Climate Commitment signatories and other real estate companies to develop an approach to climate resilience

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1. Opening statement

The potentially catastrophic consequences of the climate crisis are becoming ever clearer.

While climate change is global in scale there are also highly localised environmental and social impacts that threaten our cities, buildings and communities. It is therefore critical for us to consider and integrate climate resilience into our business strategies.

In 2019 the Better Buildings Partnership (BBP) published the Climate Commitment – a pledge open to all property owners and investors committed to delivering net zero buildings before 2050. Thirty four (34) real estate businesses representing more than £400Bn in AUM and 11,000 properties have now signed up and are working hard to turn ambition into action.

The concept of climate resilience was incorporated into the Commitment from the start, seeking to ensure that signatories addressed the potential risks and opportunities connected with adapting to the impact of climate change, in addition to setting out their pathways to net zero carbon. Specifically, Commitment signatories have agreed to *“develop comprehensive climate change resilience strategies for our portfolios and work together to develop consistent industry disclosure on climate change risks in line with industry standards, including the Task Force on Climate Related Financial Disclosure.”*

The BBP's Climate Resilience Working Group is responsible for developing the BBP's approach to climate resilience, including outlining how it is delivered and measured. Additionally, through the Working Group, BBP members and Commitment signatories can support each other to expand and evolve best practice. This document sets out that approach.

The first of these challenges is definition. Climate resilience can mean different things to different organisations, though historically it has been associated with the physical impacts of climate change on buildings. Our Working Group has taken a wider view – climate change has been demonstrated to have an impact not just on physical assets, but on supply

chains, tenants and wider communities. Transitional impacts of climate change are highly material – an asset can incorporate defences against flooding or over-heating but if it is poor-performing in terms of energy use intensity is it truly resilient to a changing market?

Real estate companies are using a huge range of metrics to evidence their resilience, with little commonality and no clear answers to investors on what they should be looking for.

Government regulation is growing in this space – principally through the EU's Taxonomy and SFDR Regulation, the UK's own Taxonomy and SDR and incorporation of TCFD reporting requirements into law – but there is a crucial role and opportunity for real estate companies to move the debate forward.

In releasing this document, we hope to do just that, and move the debate forward. Firstly, by supporting signatories to the Climate Commitment, helping them better understand what is required of them as a signatory in terms of climate resilience. Secondly, we hope to support other property companies – including those outside of the BBP membership – to take their first steps framing, assessing and reporting the climate resilience of their portfolios. Finally, if we are to move more quickly to a common understanding of what climate resilient portfolios look like we need to stimulate debate and discussion, we hope that this document will support that debate.

GPE was one of the founding signatories of the BBP Climate Commitment, which has already had a transformational impact on the industry and is continuing to bring property owners and investors together to learn from each other on the critical issue of climate change. We encourage all real estate owners and investors to sign up to the Commitment (you do not need to be a member of the BBP) and to utilise this Industry Insight to support the development and delivery of their climate resilience strategies.



Janine Cole

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2. Introduction

Climate change presents material financial risk to real assets.¹ At least one-third of real assets globally are estimated to be exposed to climate hazards, from river and coastal flooding to sea level rise; from hurricanes and typhoons to fires and extreme heat.² According to Swiss Re, losses due to weather-related events have increased nearly ten-fold over the last four decades, to \$119bn per year. Climate risks are expected to add \$200bn to annual property insurance premiums by 2040.³

Beyond the physical impacts of climate change, increasing regulation and changing market preferences as part of the low carbon transition are influencing investment management and performance. Investors and asset managers today see the ability to mitigate and price climate risk as critical to protecting the value of real assets. For property owners and developers, creating climate resilient portfolios involves answering questions such as:

- how will the physical impacts of climate change manifest at the city and property level, and what value is at risk from these events?
- how will markets react to climate regulation and changing occupier and investor preferences?
- which measures will safeguard the value of real assets from physical and transitional climate risks?
- which metrics and building characteristics provide a reliable indicator of vulnerability – or resilience – to climate change impacts?

Market frameworks are emerging to enable asset owners to categorise climate risks and opportunities, and to organise climate-related data into useful disclosure for stakeholders. This has been driven principally by the Taskforce for Climate-related Financial Disclosures (TCFD)⁴, which aims to provide all businesses with the means to consistently report how they manage climate issues and integrate this into mainstream financial filings.

3. Document purpose

This document is designed to:

- provide BBP members and other real estate companies with a working definition for climate resilience which can be used consistently across the industry;
- highlight useful industry guidance for building climate resilience strategies;
- highlight best practise in how BBP members are disclosing climate information through TCFD-aligned reporting; and
- provide BBP Climate Commitment signatories with guidance concerning what is required to demonstrate that they have fulfilled the requirement to ‘develop a comprehensive climate resilience strategy.’

It is important to note that climate resilience is a fast-evolving subject, and so this document may be subject to revisions in the future. The future development of this document will be the responsibility of the BBP’s Climate Resilience Working Group and we welcome feedback from all stakeholders to help inform this.

4. Defining climate resilience

It is not straightforward to find a single definition for climate resilience. It is a broad term with differing interpretations across economic sectors.

The Intergovernmental Panel on Climate Change (IPCC) definition of resilience broadly is the “*capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation*”.⁵

The Centre for Climate and Energy Solutions defines climate resilience as “...*the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.*”⁶

These definitions appear to focus on the adaptation aspect of climate resilience. Actions taken to mitigate the worst impacts of climate change also support greater resilience. The Climate Bond Initiative’s (CBI) Adaptation and Resilience Expert Group (AREG) captures this mitigation aspect in their definition, considering investments to be climate resilient if they “...*improve the ability of assets and systems to persist, adapt and/or transform in the face of climate-related stresses and shocks in a timely, efficient and fair manner that reduces risk, avoids maladaptation, unlocks development and creates benefits*”.⁷

A further definition from the UNFCCC Climate Action Pathway on Climate Resilience highlights the interdependence of people, businesses, systems and infrastructure in delivering climate resilience. Their vision of climate resilience consists of three outcomes⁸:

- Resilient people and livelihoods (where people most vulnerable to climate risks are resilient, prosper and thrive).

- Resilient businesses and economies (where climate risks are fully understood by all businesses, investors, and society).
- Resilient environmental systems (where nature is the first line of defence against extreme events, disasters, and long-term climactic changes).

This principal of interdependence is highly relevant to climate resilience in a real estate context. The sector comprises a large set of interdependent stakeholders. Investors, owners, managers, managing agents, occupiers, suppliers and developers are all affected by how resilient built assets are to climate change. Therefore, by definition, climate resilience extends beyond a building to its local infrastructure, systems, communities, and populations.

THE BBP'S CLIMATE RESILIENCE DEFINITION

To support BBP members and other real estate companies the BBP have developed a working definition for a climate resilient real estate business (Figure 1). This definition was developed by the BBP’s Climate Resilience Working Group, comprising more than 40 asset owners, managers, and developers from across the BBP membership with a diversity of property portfolios and commercial contexts.

Figure 1: BBP definition of climate resilience

A climate-resilient business has a strategy in place to:

Mitigate the worst impacts of climate change by becoming ‘net zero’ carbon before 2050

Adapt to operating in a world in which climate-driven disruption is more frequent and severe

Disclose climate related information to investors, regulators and other stakeholders in a useful and timely way

This definition has been developed principally to provide signatories of the BBP's Climate Commitment with a shared meaning of the term. Under this definition, climate resilience has three components outlined in the boxes in Figure 2.

Figure 2: Three components of climate resilience

Climate change mitigation

A climate-resilient business has a plan to mitigate the worst impacts of climate change by reducing its carbon emissions impact to 'net zero.' The decarbonisation of portfolios and corporate activities builds climate resilience in several ways:

By contributing to global mitigation efforts, the business is reducing the likelihood and severity of physical climate impacts on its buildings and value chains which pose a threat to normal operation.

Reducing the exposure of the business to carbon intensive activities reduces the likelihood that tighter regulatory restrictions such as carbon taxation will affect competitiveness.

Reducing climate impact can increase attractiveness to prospective investors, financiers and employees. This builds resilience by widening access to capital, markets, customers and skills.

Climate change adaptation

A climate-resilient business can adapt to operating in a world in which climate-driven disruption is more frequent and severe.⁹ This builds climate resilience in several ways:

By anticipating the likely climate impacts, the business may be better able to prevent major financial losses and prevent damage or harm to people or the environment.

By anticipating the likely market disruptions driven by climate change (or the response to it), the business may be better able to manage risks and capitalise on opportunities.

Climate adaptation measures can offer significant co-benefits in terms of biodiversity, social value and quality of space which can support value creation and retention.

Climate change disclosure

A climate-resilient business provides climate-related information to investors, regulators, and other stakeholders in a useful and timely way. This builds resilience in several ways:

Disclosing understandable and comparable climate-related information gives confidence to stakeholders who make decisions based on judgements concerning the resilience of the business including financiers, lenders, investors and other stakeholders.

Through climate resilience disclosure, businesses can provide an important source of information for third party index providers and assessors who analyse and benchmark business performance and potential.

Contributing to the development and adoption of best practice disclosure principles supports the long term viability of real assets to investors, including how it affects other stakeholders such as occupiers and communities who are affected by them.

5. The Climate Commitment and climate resilience strategies

In acknowledgement of the significance of climate resilience to commercial real estate investment, the [BBP's Climate Commitment](#) includes a provision relating to climate resilience. Signatories commit to the following:

By 2022, we will develop comprehensive climate change resilience strategies for our portfolios and work together to develop consistent industry disclosure on climate change risks in line with industry standards, including the Task Force on Climate Related Financial Disclosure

To support signatories in interpreting this commitment, the BBP's Climate Resilience Working Group has agreed that signatories should undertake the following, summarised in Figure 3:

1. Climate Commitment signatories should commit to using the BBP's definition for climate resilience, as per Figure 1. We encourage signatories to include reference to this definition in reporting materials relating to climate resilience to provide evidence of this commitment. Signatories may choose to include an adapted version of Figure 1, or simply state their alignment with the BBP definition with reference to this document.
2. Where possible, signatories should produce a Taskforce for Climate-related Financial Disclosures (TCFD)-aligned disclosure for their business (or one that reflects their real estate business or activities if they are a multi-asset class investor). With regard

to timing, this can be aligned with existing reporting periods, and it is agreed that this can be interpreted as covering at the latest the reporting period which begins at any point in 2022. For example, for a business whose reporting year begins on the 1st March 2022 and ends on the 28th February 2023, they should aim to produce this disclosure in the reporting window that reflects this reporting year at the latest. Businesses that sign the Climate Commitment from 2023 will, in common with provisions on the publication of a Net Zero Carbon Pathway, need to meet the criteria as a condition of signing the Commitment.

The BBP recognises that for some businesses, a TCFD disclosure for the real estate arm of the business is not always an existing or necessary disclosure and in these cases, may not be practical or useful to deliver. This is particularly the case for fund managers who are typically expected to comply with TCFD requirements at the group entity or product level. For these businesses, the BBP has provided an alternative route to compliance. This is in the form of a request to 'describe how an approach to climate resilience is integrated into the investment and asset management process'. The relevant businesses may decide on the best location for this information. There may be differing ways of doing this – whether adding to net zero carbon pathways, publishing a short statement or adding to existing annual or sustainability reporting. The BBP will monitor compliance and may revisit these requirements in future.

The BBP also recognises that there are some businesses able and willing to go a step further - in disclosing their approach to managing climate adaptation. For these businesses, the BBP recommends that they produce and publish a **climate adaptation plan**. Section 6.2 provides guidance and recommendations on how this can be approached.

Figure 3: Summary of requirements for BBP Climate Commitment signatories around climate resilience

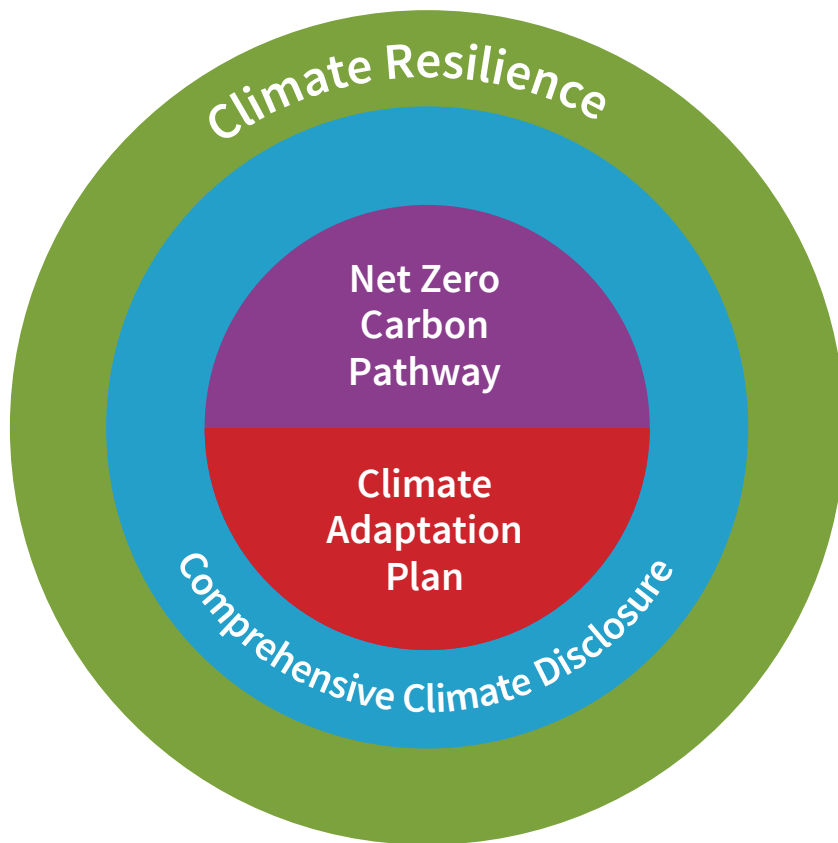


[†] At the latest, for the reporting year that begins at any point during 2022

6. Building a climate resilience strategy

To deliver on this definition, property owners need to develop a comprehensive climate resilience strategy. Figure 4 provides a high-level illustration of the components of this strategy and how they map to the three elements of the definition. The following section expands on each element.

Figure 4: Components of a climate resilience strategy



A climate-resilient business has a strategy in place to:

Mitigate the worst impacts of climate change by becoming 'net zero' carbon before 2050

Adapt to operating in a world in which climate-driven disruption is more frequent and severe

Disclose climate related information to investors, regulators and other stakeholders in a useful and timely way

6.1 Net Zero Carbon pathway

A core element of any climate resilience strategy should be a Net Zero Carbon Pathway. This outlines how the business will drive down greenhouse gas emissions to ‘net zero’ before 2050. ‘Net zero’ is when the carbon emissions emitted as a result of all activities associated with the development, ownership and servicing of a building are zero or negative.

The BBP’s [Net Zero Carbon Pathway Framework](#) (Published in 2020 to support the BBP Climate Commitment) sets out the information that property owners are recommended to include in Net Zero

Carbon Pathways including the investment boundaries, carbon scope and delivery strategies. Ideally the pathway will be a publicly available document to inform investors and other stakeholders. Several ‘Net Zero’ pledges and commitments exist for real estate companies to sign up to.¹⁰ More than 30 real estate companies have signed up the BBP’s Climate Commitment and published their pathways to net zero carbon.¹¹ Table 1 provides a list of resources available to real estate companies for guidance on developing net zero carbon pathways and addressing the climate change mitigation aspect of climate resilience. With this guidance already available, the remainder of this document provides more in-depth guidance on climate adaptation plans and climate disclosure.

Table 1: Guidance for real estate companies on net zero carbon pathways

- **Net Zero Carbon Pathway Framework (BBP, 2020):** This framework has been designed to support signatories to the BBP’s Climate Change Commitment and encourage greater transparency concerning the scope of property owners’ net zero carbon pathways. The framework sets out the information that property owners should include in their net zero carbon pathways, including the investment boundaries, carbon scope and delivery strategies.
- **NZC Pathways for Climate Commitment signatories (various, 2020-present):** More than 30 real estate companies have published their pathways to net zero carbon. These provide a great resource for property owners still developing their approaches. All pathways can be found [here](#).
- **Pathways to Net Zero Carbon Emissions in International Real Estate Investment (IPF, 2022):** This research considers the challenges the real estate industry faces in defining and delivering net zero carbon (NZC). The study reviews existing industry efforts to frame net zero, focusing on the variation in scope, stringency, and applicability of these schemes.
- **Net Zero Whole Life Carbon Roadmap for the Built Environment (UKGBC, 2020):** The UKGBC have developed a common vision and agreed actions for achieving net zero carbon in the construction, operation and demolition of buildings and infrastructure. This provides a high-level blueprint at an economy level for achieving net zero in the built environment.
- **A significant number of other industry resources** for developing net zero carbon pathways, on topics including operational performance targets, renewable energy, offsetting and embodied carbon can be found in Appendix 3 of the [BBP’s Net Zero Carbon Pathway Framework](#).

6.2 Climate Adaptation Plan

Another core element of a climate resilience strategy is a Climate Adaptation Plan. This outlines the steps the business will take to ensure that it can continue to operate in a world with increasing climate change impacts. ‘Adaptation’ goes beyond the physical impacts of climate change to how the business adapts to changing trading conditions, regulation, and customer preferences. While the net zero carbon pathway outlined in Section 6.1 will help the business adapt to transition risks, the focus

of the adaptation plan is to capture, assess and respond to the physical and transitional risks which are not already addressed by the net zero carbon pathway.

Figure 5 and the following section outlines eight considerations when developing the business’s approach to climate adaptation developed by the BBP Climate Resilience Working Group. Table 3 at the end of this section provides a list of resources available to real estate companies for guidance on developing climate adaptation plans.

Figure 5: Eight considerations for property owners in developing climate adaptation plans



1. WHICH PHYSICAL AND TRANSITIONAL CLIMATE IMPACTS MIGHT IMPACT OUR PORTFOLIO?

A key first step in developing a climate adaptation plan is to identify the climate impacts most likely to cause material disruption or loss of value to assets. Figure 6 provides examples of chronic and acute climate impacts. Many property owners are turning to third-party climate risk analytics services to provide insights on the frequency, severity and cost implications of these events occurring, in some cases down to building-level granularity.^{12, 13}

The climate impacts relevant to a specific asset can vary with several factors. The location will determine the type, severity and likelihood of climate risks that are material. The proximity of assets to coastlines, rivers and waterways, woodlands, low-lying areas, and other potential sources of climate-driven hazards will influence the risk profile.

The market response to climate change is also progressing at quite different speeds across the world creating differences in the transitional risks and

opportunities relevant to portfolios. For example, the implementation of regulatory instruments to manage energy or carbon use in buildings is typically more advanced in Europe and Australia than other parts of the world.

A review of the TCFD disclosures of BBP members in 2022 found that the market response to climate change is expected to impact real estate companies in several ways:

- Increasing regulation of energy and carbon in buildings and supply chains in general, but also a divergence across regions in the speed and depth of the policy response.
- Changing occupier and investor preferences, specifically greater attention and interest in energy and carbon performance in buildings.
- Increasing requirements around ESG and sustainability in order to access finance.

The ‘Strategy’ section of Section 7 provides more in-depth analysis.

Figure 6: Classification of climate-related hazards (UKGBC, adapted from the EU Taxonomy technical report)

	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic hazards (slow-onset)	Changing temperature (air, freshwater, marine water)	Changing wind patterns	Changing precipitation patterns and types (rain, hail, snow/ice)	Coastal erosion
	Heat stress		Precipitation and/or hydrological variability	Soil degradation
	Temperature variability		Ocean acidification	Soil erosion
	Permafrost thawing		Saline intrusion*	Solifluction**
Acute hazards (extreme)	Heat wave	Cyclone, hurricane, typhoon	Drought	Avalanche
	Cold/frost wave	Storm (including blizzards, dust and sand storms)	Heavy precipitation (rain, hail, snow/ice)	Landslide
	Wildfire	Tornado	Flood (coastal, fluvial, pluvial, ground water) Glacial lake outburst	Subsidence

Asset type may determine the balance and types of physical and transitional climate hazards that are relevant. Some asset types are more commonly found in locations where specific climate-driven risks are more apparent – for example city centre offices are more likely to be affected by the increasing severity and likelihood of extreme heat events.

Again, the type of asset can have a bearing on the type and severity of material risks – the resilience of a shopping centre for example is compromised if local communities of customers and employees are hit by extreme weather events.

It is also important to consider as part of this exercise that beyond the asset itself, the climate hazards in Figure 6 can threaten resilience in several other ways:

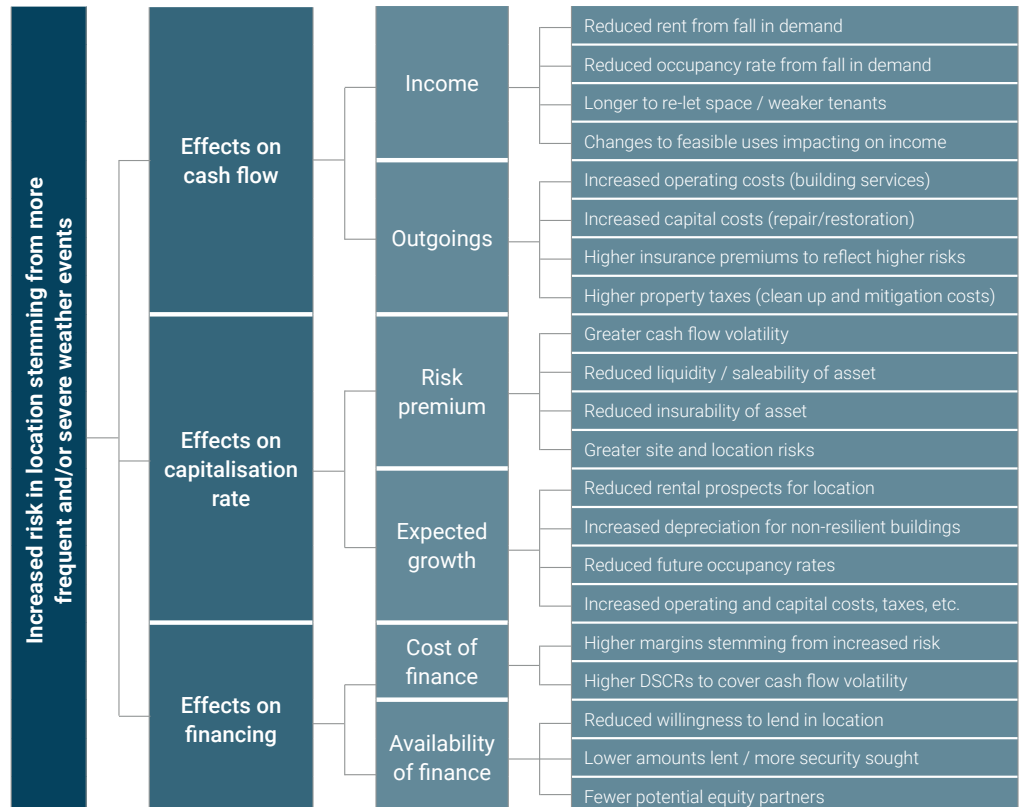
- the sourcing of materials for development and refurbishment projects may be affected by climate events affecting road, sea, and air freight.
- construction sites may be disrupted by extreme weather events causing damage, losses, or delays to project timescales.
- access to the asset via local road networks and public transport infrastructure may be disrupted impacting employees and occupiers/visitors.
- supply chain disruption which impacts good and services being provided at the asset.
- site infrastructure such as energy supply or waste management impacting the safe and effective operation of the building.

2. WHAT IS THE VALUE-AT-STAKE IF NO ACTION IS TAKEN?

Alongside identifying the climate risks at the asset level, it is important to identify the potential financial impact of these risks materialising. Some property owners choose to characterise this in terms of traditional performance metrics such as return, income, value, or insurance premiums. Some property owners have chosen to adopt ‘Climate Value at Risk’ or CVAR, a term that is defined variably across the industry but can be generalised to “the size of loss on a portfolio of assets over a given time horizon, at given probability”.¹⁴ Methodologies for determining CVAR can include costs associated with:

- maintenance and repair
- higher insurance premiums
- the potential impacts on income (e.g., reduction in rent due to building disruption in the short-term or rental attractiveness in the long term)
- impacts on valuation

Figure 7: Potential impacts on financing, capitalisation, and cash flow from climate-related impacts (UNEP FI)



It is also important to note that value creation or retention may be affected by climate change impacts through the supply chain. For example, income may be at risk if an asset cannot be refurbished or completed in time to suit occupier demand due to the unavailability of materials.

Figure 7 is taken from the UNEP FI's "Climate Risk & Commercial Property Values" report and illustrates

the potential impacts on financing, capitalisation, and cash flow from climate-related impacts. Third party service providers can assist with the quantification of value at risk at a high level, usually using desk-based methods. Collaboration between risk, finance and ESG teams will then be vital to test any assumptions utilised, pool existing knowledge and develop tools and services to help inform decision making, reduce the CVar and address associated liabilities.



Figure 8: BBP Member Case Study on the determination of value at stake or climate value at risk

To better understand the climate risks facing their assets, **Grosvenor Property UK (GPUK)** have carried out a climate risk assessment across all their assets using the [MSCI Climate Value at Risk \(CVar\) tool](#). The tool models the physical risk for each of the hundreds of assets that GPUK provided information on, as well as 15 different transition risk scenarios. Due to the concentration of GPUK's assets in Central London, they share many of the same physical risk characteristics, however transition risk can vary significantly between properties. The MSCI tool was chosen due to the multiple transition risk model opportunities.

To maximise the benefit provided by the tool, GPUK plan on using the data to help inform their £90m retrofit programme to help them target assets with a greater climate risk. They are also looking to connect this analysis to their biodiversity strategy, as elements which improve biodiversity often have co-benefits in terms of reducing the physical climate risk of an asset. For example, green roofs can help significantly reduce peak run-off rates to storm drains, lowering the flood risk at building or street level, and mature trees can help shade buildings, reducing heat stress.

There is a lack of standardisation in reporting climate risk, and the variability of data obtained when using different tools or consultants can present a challenge. Grosvenor's approach is to use the CVar tool to create a consistent overview of climate resilience across their portfolio which allows them to track progress and target investment and interventions to greatest effect over time.

LaSalle have also used a similar approach, using climate risk assessment tools to gather data at a high level to develop an approach to understanding risk. They then look at assets at higher risk in more detail, such as those in vulnerable geographic areas, to better understand the specific context and challenges of the assets in that region. To address the lack of standardisation, LaSalle are working with the Urban Land Institute to bring more standardisation to climate risk assessments.




3. WHAT PRACTICAL MEASURES WILL BE APPLIED AT THE BUILDING LEVEL TO BUILD RESILIENCE?

Having assessed the impacts and associated value at risk, property owners will need to consider the practical measures that can be taken to reduce risk and improve resilience. Table 2 provides a range of examples of climate adaptation measures applicable to buildings and urban landscapes to mitigate the impact of a range of physical climate risks. These are selected from BBP member climate disclosures and a range of sources referenced in Table 3.

A number of tools and guidance materials are available to help measure and report physical risks to built assets. The UKGBC’s ‘Framework for Measuring and Reporting of Climate-related Physical Risks to Built Assets’ provides a list of these.¹⁵

It is important to note that many of these measures – especially those designed to address acute physical climate events such as flooding – may be supported by wider processes including Business Continuity Plans (BCPs) and Emergency Continuity Plans (ECPs) to ensure that staff know how to operate and maximise the effectiveness of the measures themselves.

Table 2: Examples of adaptation measures by physical climate hazard

Physical climate risks	Building impacts	Example adaptation measures
Flooding 	<ul style="list-style-type: none"> • Damage to structures • Undermining of building foundations • Water contamination • Water supply disruption • Clogging of sanitation networks • Danger to life of occupants in extreme cases • Discontinuity of use 	<p>Engineered solutions / systems</p> <ul style="list-style-type: none"> • Early warning systems • Designing-in raised first floors • Flood resistant materials e.g., steel skirting boards and solid flooring • Installing boilers, chillers, and air-handlers on roof • Installing pumps in basement areas • Raise electrical points off the ground • Using waterproof materials • Protect and seal building openings • Flood risk assessments • Standby irrigation pumps to improve drainage • Insurance • Lease protections <p>Nature-based solutions</p> <ul style="list-style-type: none"> • Increasing permeable surfaces and water retention schemes e.g., basins, wetlands¹⁶ • Sustainable urban drainage systems (SUDS) • Urban infiltration strips • Bioswales¹⁷ • Soil structure improvements • Afforestation • Restoration of rivers
Storms 	<ul style="list-style-type: none"> • Increased wind loading to roofs and facades 	<ul style="list-style-type: none"> • Reinforcement of building structure e.g., roofs • Increasing the capacity of guttering and drainage down-pipes. • Anchor roof-sited equipment
Water stress 	<ul style="list-style-type: none"> • Reduced access to potable water 	<ul style="list-style-type: none"> • Rainwater harvesting • Highly water-efficient fixtures • Deep water retention

Physical climate risks	Building impacts	Example adaptation measures
Wildfires 	<ul style="list-style-type: none"> • Building damage and losses • Risk of explosion if near gas or water supplies 	<ul style="list-style-type: none"> • Sprinkler systems • Habitat management • Biotopes with extinguishing water ponds • Build at distance for woodlands • Increase use of fire-retardant materials
Heat stress 	<ul style="list-style-type: none"> • Increased wear of building materials • decreased occupier comfort • increased energy consumption for cooling • malfunction of IT and HVAC equipment 	<p>Engineered solutions</p> <ul style="list-style-type: none"> • Natural ventilation • Passive cooling measures e.g., nighttime ventilation; wind ventilation; opening windows)¹⁸ • Installing cooling plant suitable for likely future needs • External shading • Window tinting • Electrochromic glass • Solar control window films • Cool roofs / facades with high albedo • Double facades • Thermal modelling of buildings • Constructed blinds e.g., louvres, canopies, awnings, brise soleil • Reduce window to wall ratio in design <p>Nature-based solutions</p> <ul style="list-style-type: none"> • Increasing tree cover and installation of green roofs • Use of drought resistant plants • Green corridors



CASE STUDY

Figure 9: Case Study on identification and mitigation of a physical climate risk at the asset level

As part of their management of climate related risks, **Orchard Street Investment Management** has identified practical asset-level measures to increase flood risk resilience for its assets under management. The removable flood risk barrier for an underground car park is shown in the image on the left below. This is a relatively low cost and rapidly deployable measure that can prevent substantial damage and inconvenience in the event of flooding. Similarly, the image to the bottom right shows a ‘bunded wall’. This can protect equipment and electrical points in the basement floor of buildings. The image also shows a fire extinguisher and HVAC plant raised off the ground which can reduce the risk of damage and downtime in the event of flooding.



4. HOW ARE CLIMATE ADAPTATION MEASURES INTEGRATED INTO EACH STAGE OF THE INVESTMENT LIFECYCLE?

Climate resilience requires ‘checks and balances’ at each stage of the investment lifecycle. This starts at acquisition, with due diligence processes designed to assess vulnerability to climate impacts. These support the prospective new owner to identify the necessary investment to ensure the asset is well-adapted to changing climatic conditions. Figure 10 provides examples of considerations to integrate climate risk controls through the investment lifecycle.

It is important to note that the stakeholders involved in each stage of the investment lifecycle need to have the skills to help inform decision-making. The BBP's [ESG Training Course for Real Estate Professionals](#) is designed to provide a grounding in how ESG is integrated into the investment lifecycle, for those working within asset owner/manager and advisory organisations.

Furthermore it is important to ensure that objective-setting and remuneration policies reward the effective management of climate resilience for stakeholders throughout the business.

Figure 10: Example considerations to integrate climate risk controls through the investment lifecycle (taken from the BBP’s ESG Training Course for Real Estate Professionals)

Strategy and Capital raising	<ul style="list-style-type: none"> • Are adaptation characteristics clearly defined? • How will adaptation attributes be measured and reported to capital providers? • Are relevant Taxonomy criteria met?
Asset Purchasing	<ul style="list-style-type: none"> • How will the climate vulnerability / adaptation of the asset impact on total returns over the holding period? • What impact will a purchase have on the climate resilience of the portfolio? • Can climate risk and opportunity be addressed in the business plan? • Does the asset's climate resilience impact on the price that the investor is willing to pay for the asset?
Lettings, Renewals, Expiries	<ul style="list-style-type: none"> • Will the risk of tenant flight be elevated at break/expiry due to lack of adaptation measures, or will rental growth be suppressed? • Will occupier activities give rise to risk or contravene investor restrictions? • Will covenant be affected by exposure to climate risk? • How will adaptation factors be safeguarded / optimised during lease? • Do occupier goals create opportunity for collaboration? • How do 'green leases' address climate resilience of the asset?
Property Management	<ul style="list-style-type: none"> • Is there any relevant regulation that may impact existing stock? • How capable and accountable are suppliers on climate resilience? • Will Planned preventative Maintenance measures ensure resilience? • What data is needed to monitor, manage and report on performance and impact?
Development and Renovation	<ul style="list-style-type: none"> • What impact will tightening regulations and changing occupier preferences have on the standards required of development & renovation? • What compliance and uninsured liabilities apply, and with whom do they rest? • How will climate resilience be measured, optimised and certified? • What opportunities exist to finance resilience measures? Do they meet relevant Taxonomy criteria?
Exit	<ul style="list-style-type: none"> • Will perceived or actual risks impact on exit yields and / or liquidity? • Have investments had a full accounting year to realise Net operating income / capitalisation benefit? • Have climate adaptation objectives been realised and are they safeguarded? • Does the buyer align with ‘responsible exit’ considerations? • Is there sufficient climate adaptation information to satisfy purchasers’ due diligence requirements?



Figure 11: BBP member Case Study on the integration of climate adaptation / resilience considerations into asset due diligence.

BBP member **Savills Investment Management** have integrated physical climate risk screening into their acquisition process. This process starts with a pipeline of potential acquisitions that may become prospective transactions reviewed through the Investment Advisory Committee (IAC) and due diligence process. While still in the pipeline, all assets undergo a risk assessment against physical climate hazards using RCP scenarios 2.5, 4.6 and 8.5. The third-party system carrying out the [analysis](#) utilises data from numerous sources and runs a dynamic climate model using asset addresses.

When an asset proceeds to IAC review, the medium to high risks from the model are included as standard in the IAC papers, and proposition teams are required to add commentary around opportunities to reduce the risk and how this would impact the residual risk.

When an investment proposal is first presented to the IAC, inherent physical climate risk considerations may be challenged by independent committee members to provoke how climate risk may be addressed.

Additional steps are expected to be taken by the fund teams and if required, with consultation from third-party advisors to conduct a deep-dive analysis to understand how adaptation and/or mitigation efforts may reduce the overall risk exposure, including prospective costs, time and a formal plan of action in the asset management business plan. Consequently, climate risk is an element reported by fund teams on a regular basis, which provides governance committees with oversight of climate risk exposure, and whether there are any heightened levels of increased risk potential.



5. HOW MIGHT CLIMATE ADAPTATION MEASURES SUPPORT OR HINDER CLIMATE CHANGE MITIGATION?

It is important to note that there can be an interaction between climate adaptation and climate mitigation measures. While some measures support both goals, others may hinder or create further considerations for the achievement of the second goal. Some climate adaptation measures may generate embodied carbon, which must then be measured and captured as part of carbon foot-printing and net zero

carbon pathways. For example, the installation of green roofs can increase the weight load and require greater structural support underneath, which may result in greater embodied carbon.¹⁹ The addition of a green roof can add between 50 and 200kgCO₂e/m² to an existing rooftop. The installation of additional cooling plant to reduce heat stress may increase energy consumption and associated carbon emissions.

It is important to consider and evaluate the potential detrimental or mutually reinforcing impact on mitigation of adaptation efforts, and vice versa.

6. HOW IS COLLABORATION BETWEEN BUSINESS UNITS ENABLING BETTER ADAPTATION TO CLIMATE CHANGE?

The successful management of climate risks is supported by close working relationships between different business functions. For adaptation measures to be properly integrated throughout the lifecycle there must be a common goal between these diverse functions of the business:

ESG teams: Typically charged with responsibility for the business's climate change strategy.

Investment: The costs and upsides of climate mitigation and adaptation measures are expected to be an increasingly important factor in investment decision-making, influencing acquisitions and disposals.

Finance: The costs associated with climate impacts and adaptation measures need to be included in financial and cash flow models and may also impact access to and cost of capital if seeking external finance.

Asset management: The costs associated with adaptation measures need to be included in refurbishment plans and asset plans. Will existing PPM measures ensure resilience?

Property/Facilities management: Measures to ensure climate resilience of assets will require that PMs and FMs are well trained and incentivised through skill development, target-setting and potentially remuneration.

Development: Climate adaptation measures that are 'designed in' will require collaboration between development teams and ESG teams.

Risk: As noted in the later section on Climate Disclosure, the integration of climate risks into wider risk management processes is one of the TCFD's eleven recommended disclosures.

Investor relations and communication: Enabling investor relations to provide an appropriate narrative on climate resilience will be important when engaging with investors and they will also be an important conduit of feedback concerning investor perceptions and analysis of climate resilience.

The examples above principally relate to internal stakeholders, but collaboration with external stakeholders on climate resilience is also important:

Occupiers: Some climate adaptation outcomes are best achieved through joint effort and collaboration between landlords and occupiers e.g., adaptations to heating system to avoid heat stress events.

Suppliers: Contractors and third-party goods and service providers need to be sufficiently trained and capable to deliver projects according to a specification that captures climate resilience.

Financiers: Real estate companies may be able to access more competitive finance if using to deliver climate resilience measures or if linked to climate resilience metrics.



Figure 12: BBP member Case Study (LGIM Real Assets) on the collaboration between ESG teams and between ESG teams and multiple stakeholders in climate adaptation

LGIM Real Assets (LGIMRA) is part of Legal & General Investment Management, which is the investment management arm of Legal & General, one of Europe's largest insurance and asset management groups. As part of LGIMRA's approach to strengthening climate risk assessment across its real estate portfolio, it aims to develop outputs that are investment decision useful. This requires a collaborative and multi-stakeholder approach, which is led by the ESG team, with the involvement of a variety of internal and external teams.

LGIMRA has worked in partnership with XDI, a physical climate risk specialist who focus on evaluating forward looking, asset level vulnerability. In order for the climate specialist to enhance assessment of asset-level risks, additional building level data can be incorporated into this assessment. This could include very specific risk elements, such as the floor height of the building, which could impact how likely a building is to flood. Asset managers lead this data collection process for each asset, engaging directly with property managers and managing agents on specific building level

information. Data gathered is then shared with the climate specialist who incorporate it into their analysis and produce risk assessments, which are then fed back to the ESG team, the asset managers and managing agents. This internal data sharing supports close working relationships and better collaboration, and as more data is gathered it will help shape strategies and investment decision making.

Developing such a multi-stakeholder process can often bring about additional complexity and hence requires an emphasis on making sure that all parties are aligned and engaged throughout the process. LGIMRA has undertaken workshops involving members of multiple teams in order to engage, gather feedback and collaborate on the methods of collecting data, and practical ways of implementing this in the due diligence and investment decision-making process. LGIMRA believes that the most optimal approach in developing a climate resilience strategy that can be decision useful for its portfolio is through direct engagement, knowledge building and collaboration.

7. WHAT IS THE ROLE OF NATURE-BASED SOLUTIONS IN OUR CLIMATE ADAPTATION STRATEGY?

Many of the measures listed in Table 2 are nature-based solutions – defined as those which “enhance and work with natural habitats to help people adapt to the effects of change and disasters”²⁰. These measures can therefore serve a dual role, enhancing climate resilience while also having an impact on biodiversity and / or environmental net gain.²¹ However, it is equally possible that nature-based solutions present trade-offs between climate adaptation / mitigation and biodiversity, for example the use of afforestation with non-native monocultures.²²

It is recommended that biodiversity impacts of climate adaptation measures are assessed and measured to ensure that trade-offs between climate and biodiversity outcomes are identified and steps taken to avoid them. One methodology for this is to follow the LEAP (Locate, Evaluate, Assess and Prepare) methodology created by the Taskforce for Nature-related Financial Disclosures.²³ The LEAP approach is designed to enable businesses to undertake a “structured, step-wise and science-based assessment of nature-related risks and opportunities through an understanding of their nature-related dependencies and nature impacts.” Alternatively, there are a range of biodiversity standards in the market including Defra Metric, EBN Tool, Value Transfer Approach, ReCiPe 2008, LIFE and BFFI which provide frameworks and methodologies for the structured assessment of nature-related risks and opportunities.

8. HOW MIGHT CLIMATE ADAPTATION MEASURES IMPACT ON SOCIAL OUTCOMES?

Improving the climate resilience of buildings through adaptation measures can support social outcomes in several ways. For buildings that are at risk of extreme weather events such as flooding or wildfires, adaptation measures can mitigate the risks to health and wellbeing

of building occupants. Furthermore, the use of nature-based solutions as part of adaptation efforts can provide facilities and amenities to improve the physical and mental health of tenants and other building users.²⁴

As with biodiversity, it is recommended that the social impacts of climate adaptation measures are assessed and measured to minimise trade-offs.

GPE.

CASE STUDY

Figure 13: BBP member Case Study on the synergies and trade-offs between climate adaptation measures, biodiversity and social impacts

GPE published their [Social Impact Strategy](#) in November 2021, laying out their strategy for creating positive social impact in communities. The Strategy centres on four key pillars: Enabling healthy and inclusive communities; Championing diverse skills and accessible employment opportunities; Supporting the growth of local business and social enterprise; and Connecting people with urban nature. The strategy seeks to underline the linkages between climate change and social impact, highlighting the disproportionate impact of climate change on the most disadvantaged in society, but also how a strong connection with urban nature can support both improved climate resilience and better health and wellbeing for communities.

GPE's strategy has highlighted the potential for synergies between action on climate and positive social impact. GPE worked with Westminster City Council to reopen Hanover Square Gardens, which had previously been closed for some years. This enabled community access as well as



delivering towards the business's biodiversity aims. GPE have found that projects which contribute towards biodiversity often have co-benefits with increasing climate resilience. Pocket parks and urban green spaces can increase biodiversity, support community wellbeing, and contribute to resilience through their impacts on reducing the urban heat island effect and reducing

Table 3: Guidance for real estate companies on climate adaptation plans

- **Buildings and Climate Change Adaptation – A call for action** ([UN Global Alliance for Buildings and Construction, 2021](#)): This report sets out key considerations for the real estate sector in developing an adaptation plan and provides a framework for suggested action in the sector.
- **Climate Risk and Real Estate: Emerging Practices for Market Assessment** ([ULI, 2020](#)): In this report, ULI and Heitman ask the question “how are leading investors factoring market-level climate risk into decision-making?”
- **Resilient Retrofits: Climate Upgrades for Existing Buildings** ([ULI, 2022](#)): This report introduces real estate actors, designers, policymakers, and finance professionals to the opportunities and challenges of preparing existing buildings for accelerating physical climate risks, including extreme temperatures, floods, storms and high winds, seismic risks, water stress/drought, and wildfires.
- **LEED Climate resilience screening tool** ([LEED](#)): This tool provides a ‘practical framework to identify climate sensitivities and to prioritize opportunities to increase resilience through the green building outcomes rewarded in LEED credits’. It is available at this link.
- **European Climate Adaptation Platform** [Climate-ADAPT](#): This resource contains a range of data and information on climate resilience in Europe, including case studies, guidance, and relevant research.
- **Mitigation, adaption, resilience: managing climate change risk through BREEAM** ([BREEAM, 2015](#)): This briefing paper identifies direct and indirect criteria that drive climate change mitigation, resilience and adaptability across the range of BREEAM performance measures.
- <https://www.urbangreenbluegrids.com/measures/> - This resource collates a range of measures for making projects sustainable and climate-proof.
- **Upcoming LaSalle / ULI research on climate change risk assessments (H2 2022)**: This upcoming report will investigate the topic of lack of transparency, and climate change risk assessments in the real estate sector.
- **Climate Risk & Commercial Property Values** ([UNEPFI, 2021](#)): This report investigates the impacts of physical climate risk on real estate markets.

6.3 Comprehensive Climate Disclosure

To facilitate transparency and accountability the final element of a Climate Resilience Strategy is comprehensive climate disclosure. This is a published document (or set of documents) disclosing the climate performance of the business. This will draw together all the key information relating to the business's climate change adaptation and mitigation measures and present it in a way that is understandable and actionable to a range of stakeholders including investors, occupiers, financiers, market regulators and employees.

A key reporting and disclosure framework that businesses are aligning with has been set out by the Taskforce for Climate-related Financial Disclosures (TCFD). In 2017 the TCFD published a set of recommendations for businesses around climate-related disclosure. Under FCA regulations

these disclosures are expected to become mandatory for all businesses in the UK by 2025. The disclosure rules will apply from January 2022 for firms with more than £50bn in AUM (or £25bn assets under administration for asset owners). The first public disclosures must be made by 30 June 2023 for the 2022 calendar year. For smaller firms above the £5bn exemption threshold, the new rules will apply from 1 January 2023 with reports for the calendar year 2023 due by 30 June 2024.²⁵

As of April 2022, two-thirds of BBP members have published a report aligned to the recommendations of the TCFD, an increase from around one-third in 2020.

Table 4 provides a list of resources available to real estate companies for guidance on developing comprehensive climate disclosures, aligned to the TCFD or other frameworks. Section 7 presents analysis from a review of BBP member TCFD disclosures around best practise reporting.

Table 4: Guidance for real estate companies on comprehensive climate disclosure

- **Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD, 2021):** The 2021 TCFD “Annex” updates and supersedes the 2017 version of Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures. It provides both general and sector-specific guidance on implementing the Task Force’s disclosure recommendations.
- **TCFD for real assets investors (UNPRI, 2021):** A technical guide which sets out key actions and practical steps that real assets investors can take under each of the four elements of the TCFD framework.
- **An asset owner’s guide to the TCFD recommendations (UNPRI, 2018):** This document provides technical guidance on actions for asset owners and the practicalities of adopting TCFD recommendations.
- **TCFD adoption in the real estate sector (Willis Towers Watson, 2021):** This whitepaper analyses key themes emerging in the real estate sector in producing TCFD disclosures.
- **A Framework for Measuring and Reporting Climate-related Physical Risks (UKGBC, 2022):** This report presents a reporting framework and methodology to be used in assessing climate-related physical risks at the built asset level to align with TCFD recommendations.
- **AIGCC Transparency in Transition Guide (AIGCC, 2017):** This guide sets out a range of frameworks, tools and reporting approaches being used by institutional investors, and provides different pathways for disclosure to reflect evolving industry practise.
- **Guidance on PRI Pilot Climate Reporting – Based on the recommendations of the FSB Task Force on Climate-Related Financial Disclosures (PRI, 2018):** A guidance note aimed at supporting institutional investors in piloting climate related disclosures in line with TCFD.
- **Enhancing transparency with the TCFD (EPRA, 2020):** This report contains practical guidance on the different elements of TCFD disclosure, with reference to the European listed Real Estate sector.
- **Taskforce on Climate-related Financial Disclosures (TCFD): ahead of mandatory reporting (Developing practice) (ERC, 2021):** In preparation for the requirement for mandatory TCFD reporting, this report includes practical examples and advice for reporting in alignment with the framework, including a focus on scenario analysis as a particularly challenging area.
- **Taskforce on Nature-related Financial Disclosures (TNFD) beta Framework:** The draft framework comprises three components; foundational guidance, including key concepts and definitions; disclosure recommendations aligned to the TCFD; and ‘how to’ guidance for nature-related risk and opportunity analysis.
- **TCFD disclosures from at least 26 BBP members + other real estate companies (various, 2019-present):** As of April 2022, 29 BBP members, and other real estate companies, have started reporting in alignment with TCFD. Examples of good practice found in these disclosures can be found throughout this document.

7. TCFD aligned reporting for real estate companies

To help inform the development of this Industry Insight, a review of BBP Members TCFD disclosures was undertaken. Using the TCFD four pillars of disclosure, this section provides a summary of TCFD recommended disclosures, analysis of BBP member disclosures and examples from BBP members, together with questions that pull out key themes for consideration when disclosing in line with TCFD*.

Governance

The purpose of the Governance section is to outline the responsibilities and capabilities of the Board and management team in addressing climate change as a business risk and opportunity. This spans from governance structures, to training and awareness of climate issues, to decision-making processes and remuneration.

TCFD recommended disclosure for Governance

1a	Board role	Describe the board's oversight of climate-related risks and opportunities.
1b	Management role	Describe management's role in assessing and managing climate-related risks and opportunities.

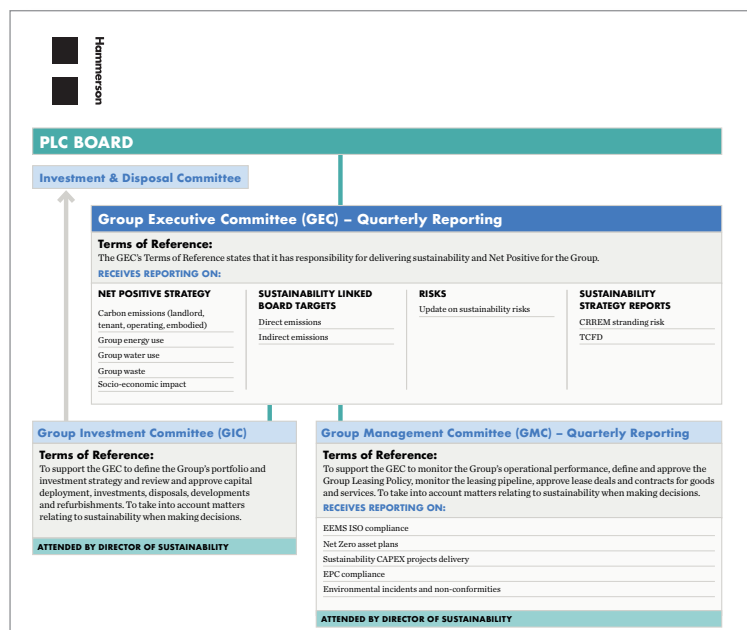
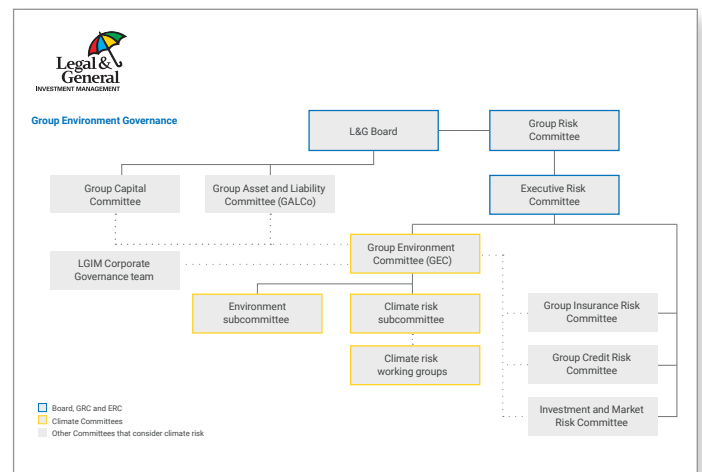
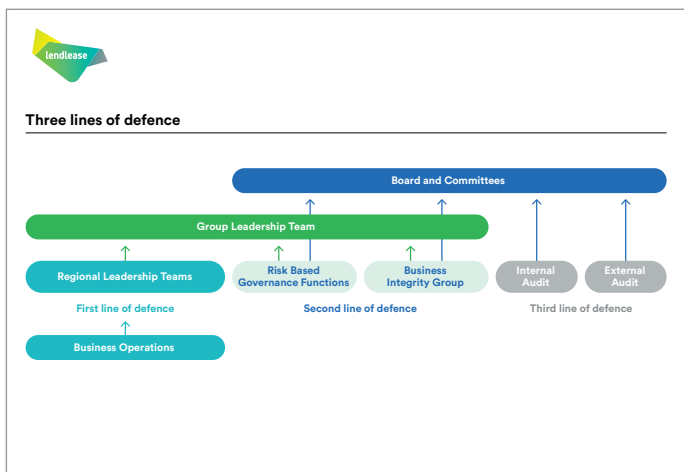
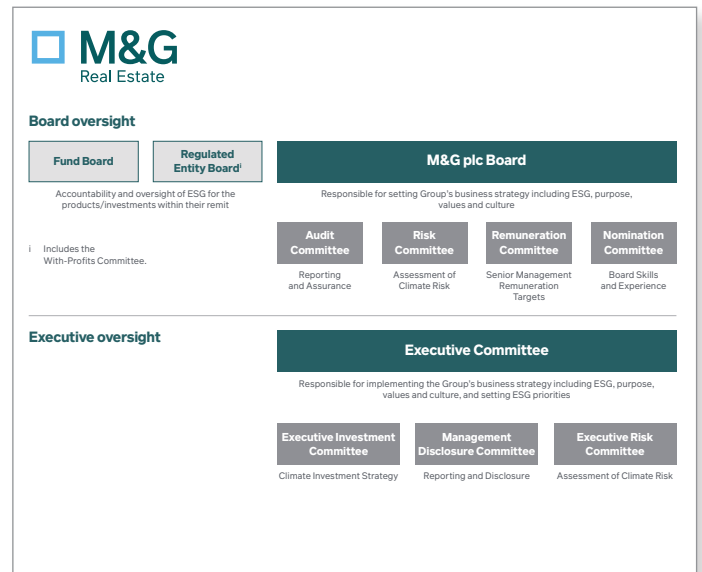
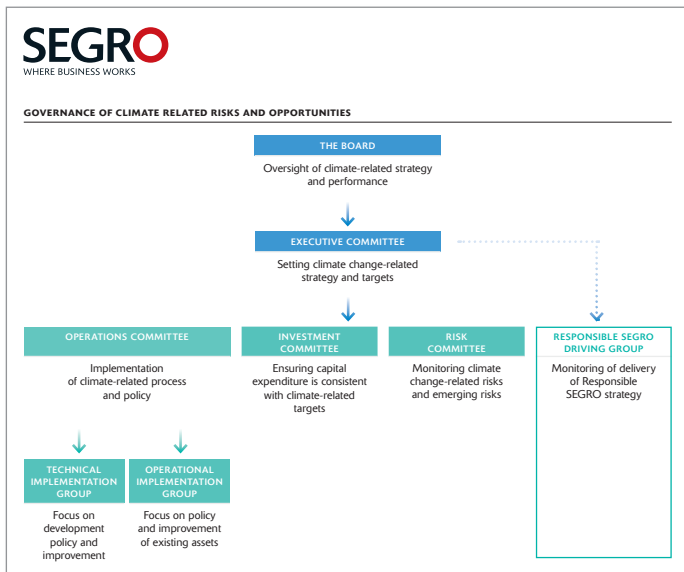
A review of BBP member disclosures identified three key themes for effective disclosure:

1. WHAT ARE THE GOVERNANCE STRUCTURES?

It is important to provide a clear picture of the governance structures around climate change in the business, ideally with a diagram or illustration. Figure 14 shows a series of examples from BBP members.^{26, 27, 28, 29, 30} In the example from Hammerson, the business shows the terms of reference, reporting lines, frequency of meetings and remits for the Board and several relevant committees. The UNPRI guide on TCFD implementation recommends that a distinction is made between those in oversight, management, and external input roles on climate risks and opportunities.³¹

* This section represents the BBP's membership and associated member TCFD disclosures as of 2021-2022

Figure 14: Example TCFD governance structures for SEGRO (top left), M&G (top right), Lendlease (middle left) and Legal and General (middle right), Hammerson (bottom)



2. HOW ARE YOU ADDRESSING SKILLS?

Climate-related issues are increasingly becoming a day-to-day topic in Boardrooms and senior management environments. However, climate change is not as well understood as some other business risks. It is a complex and fast-moving area³² with a well-documented skills shortage.³³ Providing evidence around the competence of the Board and management, and the steps the business is taking to build or bring skills into the business can provide confidence that climate change is being managed. Figure 15 provides a sample of related questions addressed in the TCFD disclosures of BBP members.

3. WHAT ARE THE SPECIFICS OF YOUR PROCESSES AND POLICIES?

Clearly outline the practical workings of climate change governance and decision-making, answering questions such as:

- Who is involved in key committees and meetings?
- How often do they meet?
- What do they discuss?
- What decisions do they make?

While these might seem like small details, they are clear, relatable and provide a basis for the business to ensure it is matching its messaging in practice. Figure 16 shows examples of some of the specific questions answered in the TCFD disclosures of BBP members.

Figure 15: Skills and training-related questions to consider in TCFD responses

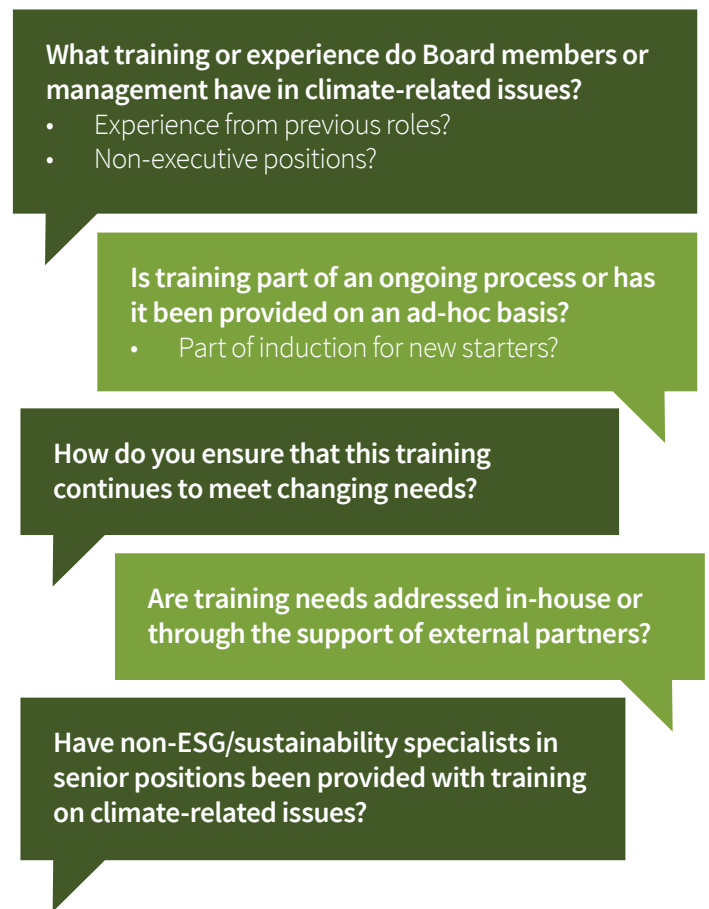



Figure 16: Board and management-related questions to consider in TCFD responses



It is also important to be specific about the decisions and actions taken by Board and management. Figure 17 is an extract from the TCFD report of Aviva Investors³⁴, with a description of the activity undertaken by the Board several relevant committees on climate-related matters. Looking forward to the short-term priorities for the year ahead helps to make clear where the perceived gaps are and how these will be addressed. In their disclosure, Frasers Property UK³⁵ detail the priorities for the upcoming year against each of the eleven TCFD recommendations (also Figure 17).


Figure 17: Example TCFD disclosures from Aviva (left) and Frasers Property UK (right)



Governance continued

Committees	Roles and responsibilities	Activity during 2021 and early 2022
Board	The Board provides leadership of Aviva within a framework of prudent and effective controls which enables risks (including climate-related risks and opportunities) to be assessed and managed.	In 2021, the Board approved Aviva's Sustainability Ambition (including our Climate Goals) and an update of our Sustainability Ambition was also presented to the Board, reporting progress and highlighting work to deliver our commitments. They also approved the 2022-2024 Business Plan (including climate metrics, targets and mitigation actions). The climate risk appetite was refined during 2021 and approved by the Board. The Board also approved the Climate-Related Financial Disclosure report.
Risk Committee	This Committee assists the Board in its oversight of risks, including climate-related risks and opportunities, by assessing the effectiveness of our risk management framework, strategy, risk appetite, risk profile and compliance with prudential regulatory requirements.	The Committee met six times in 2021 to review, manage and monitor all aspects of risk management; climate-related risks were noted in two of those meetings. In 2021 and early 2022, the Committee approved the climate risk appetite, and monitored progress made in meeting targets. The Committee reviewed the outcomes from the PRA Climate Biennial Exploratory Scenario (CBES) exercise as well as our Own Risk and Solvency Assessment (ORSA) report (including climate analysis). The Committee also requested a deep dive session on the Climate Risk Appetite Metrics and their interaction with our Sustainability Ambition targets, with a particular focus on governance across various asset classes managed by Aviva Investors.
Customer, Conduct and Reputation Committee	This Committee's responsibility is to assist the Board in shaping the culture and ethical values of the Group. This Committee is supported by Aviva's Sustainability Ambition Steering Committee.	The Committee met six times in 2021 to oversee how Aviva meets its corporate and societal obligations. Sustainability and climate-related topics were noted in two of those meetings. This Committee reviewed, in 2021 and early 2022, the development and progress of Aviva's Sustainability Ambition (including Climate Goals), governance, the non-financial reporting metrics and Climate Transition Plan. The Committee reviewed the content of the TCFD disclosures in preparation for this being voted on at the Annual General Meeting (AGM).
Audit Committee	The Committee supports the work of the Customer, Conduct and Reputation Committee in the oversight of climate and related non-financial reporting.	The Committee reviewed the climate-related financial disclosure including TCFD and recommended its approval to the Board.
Remuneration Committee	This Committee assists the Board in its oversight of remuneration including consideration of climate metrics and targets as relevant.	The Remuneration Committee approved in 2021 the metric definitions and targets for the Aviva plc 2021-2023 Long Term Incentive Plan, including metrics aligned to delivery of our Climate Transition Plan and public commitments. The Committee monitored progress against targets on a quarterly basis.
Group Executive Committee	Together with the Board, this Committee sets our strategy, values and shapes our culture.	In 2021 we established Aviva's Sustainability Ambition Steering Committee to drive and monitor the delivery of our plan and targets. This Steering Committee has delegated authority from the Group Executive Committee.

In 2021, local Boards and Risk Committees approved the 2022-2024 climate business plan and the climate risk appetite to support ongoing business decision making. These Committees monitored progress made in managing the climate-related risks against the previous business plan and reviewed the outcomes from the CBES exercise where relevant.



Priorities in 2021-2022

- Complete Net-Zero Carbon Roadmaps and associated trackers for all business units
- Ensure metrics and targets remain aligned to overall Group targets and the Paris Climate Agreement.
- Complete all business units' Net-Zero Carbon roadmaps and associated carbon inventories for future disclosure of detailed metrics and targets.
- Continue to increase data coverage of scope 1, 2 and, in particular, scope 3 emissions from all business unit activities.

Strategy

The purpose of the Strategy section is to present how climate change is impacting or could impact materially on the business's operations, strategy, and financial planning.

This starts with a clear description of the business's internal definition of material impact and understanding of short, medium, and long-term timeframes. This is also the section where the business outlines the risks and opportunities it has identified from climate change, how these might impact on the business strategy and planning, as well as detailing how 'scenario analysis' has been used to plan effectively for different 'versions of the future'.

TCFD recommended disclosure for Strategy

2a	Climate risks and opportunities	Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.
2b	Climate impacts	Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.
2c	Scenarios	Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

A review of BBP member disclosures identified three key themes for effective disclosure:

1. WHAT ARE YOUR TIMEFRAMES?


The TCFD framework encourages reporting businesses to disclose the definitions they use for short, medium, and long-term timeframes. This helps to categorise risks and opportunities based on their immediacy. Some BBP members have chosen to include these definitions in their disclosure, for example Federated Hermes³⁶ (Figure 18). This can also help in framing the scenarios used in risk assessment.

In the example below from SEGRO (Figure 19), the business highlights which climate risks and impacts are expected to materialise over which timeframes. This makes it clearer to the reader what the immediate and longer-term priorities are.

Figure 18: Short, medium and long-term timeframes from Federated Hermes TCFD disclosure

Timeframe	Climate risk definition
Short term	Risks that could cause impacts in 0-2 years from now, notably but not exclusively legal and regulatory risks and acute short-term physical risks.
Medium term	Risks that could cause impacts in 2-5 years from now, notably continued legal and regulatory but also technology and consumer demand-based market transformation risks and acute short-term physical risks.
Long term	Risks that could cause impacts in 5 years and beyond; includes legal and regulatory risks, technology and consumer-led market transformation risks and increasingly extreme weather events (acute risk) but also rising sea levels, rising sea-levels and associated floods, shifts in regional weather-related events (chronic risk).


Figure 19: Climate related risks from SEGRO TCFD report





Responsible SEGRO Disclosures
continued


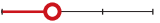

CLIMATE-RELATED FINANCIAL DISCLOSURES CONTINUED

TIME HORIZONS

Short term: up to 12 months 

Medium term: up to 5 years 

Long term: up to 10 years 

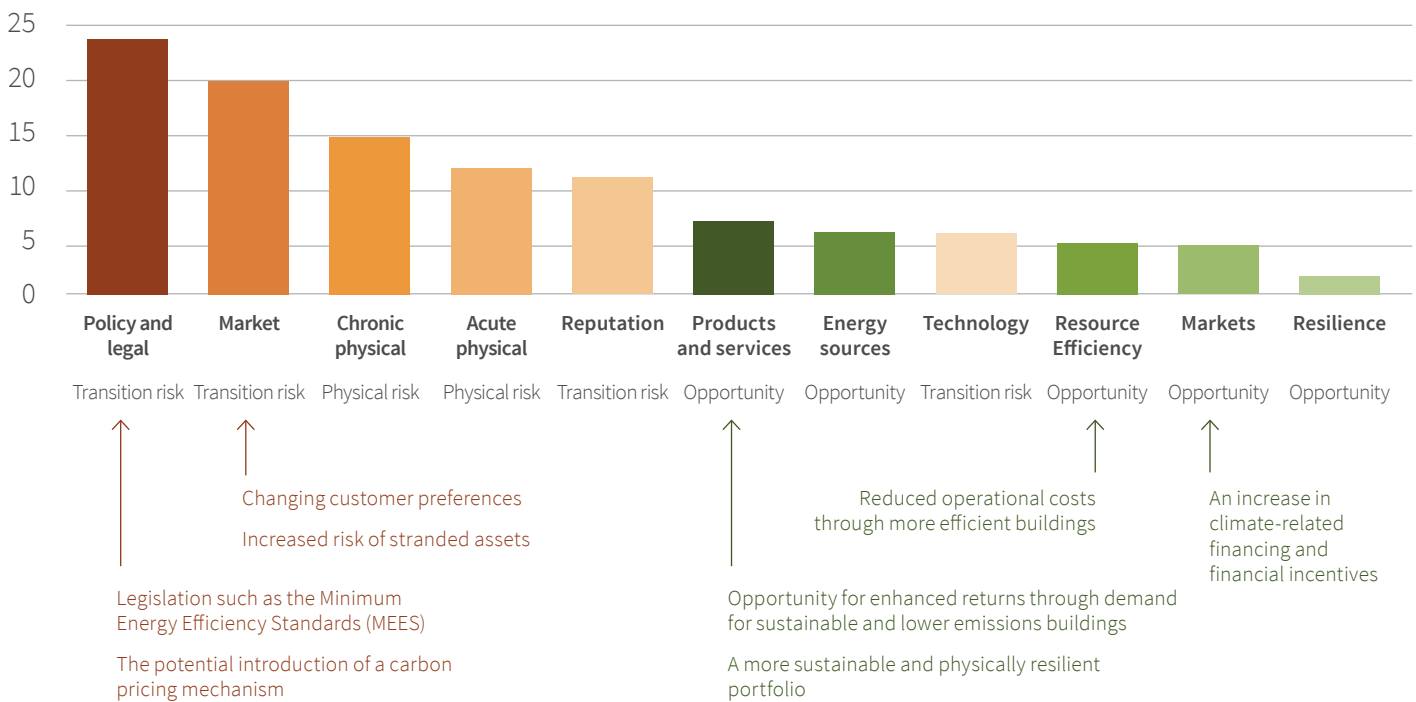
Risk	Risk Horizon	Corporate Strategy	Financial Planning
<p>Chronic physical risk Rising temperatures (including extreme heat events)</p> 	<p>Medium-term risks:</p> <ul style="list-style-type: none"> ● Higher operating costs for customers and SEGRO from increased cooling demand ● Greater investment in cooling measures inside and outside buildings ● Reduced wellbeing and productivity of workforce 	<p>Mitigations integrated into developments and refurbishments in properties in high-risk geographies, including water conservation through recycling of rain water and measures to reflect heat and improve shading externally.</p>	<p>Measures incorporated into financial appraisals of developments and refurbishments.</p>
<p>Acute physical risk Flood and precipitation</p> 	<p>Short-term risks:</p> <ul style="list-style-type: none"> ● Increased insurance costs from growing flood risk ● Increased maintenance and repair costs ● Increased investment in drainage solutions and flood defences ● Negative impact on asset valuations 	<p>All new investments (both acquisitions and developments) incorporate flood risk assessments.</p> <p>Measures taken to mitigate flood risk include rainwater recycling and landscaping to minimise run-off, and balancing pools to cater for run-off from hard-standing areas.</p>	<p>Measures incorporated into financial appraisals of acquisitions, refurbishments and developments.</p> <p>Valuers review assets for short-term physical risks as part of twice-yearly appraisals.</p>
<p>Policy & legal transition risk Environmental legislation</p> 	<p>Medium-term risks:</p> <p>In the UK, the MEES (Minimum Energy Efficiency Standard) regulations require buildings to achieve a certain standard of energy performance for them to be leased. At a high level, by 2030, properties will need to achieve a minimum Energy Performance Certificate rating of 'B' before they can be leased.</p>	<p>Properties which are unrated or have an EPC below B are expected to be upgraded when they become vacant (approximately half of such buildings in the UK are expected to be vacated by 2027).</p>	<p>Capex associated with refurbishment, including improving energy efficiency, is factored into short-term budgets and the five-year Medium Term Plan.</p> <p>The estimated cost to upgrade the UK estate to EPC rating 'B' or better is approximately £72 million by 2030, much of which will be absorbed within normal course refurbishment capex.</p>

2. WHAT RISKS AND OPPORTUNITIES DO YOU OBSERVE?

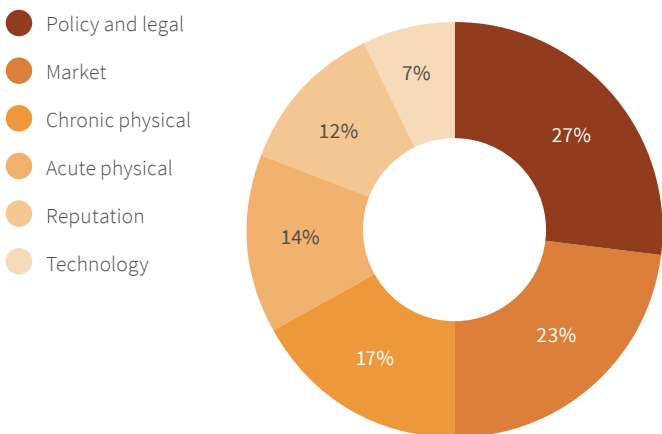
The TCFD provide a taxonomy for the categorisation of climate risks and opportunities. These provide a useful checklist for reporting businesses to consider when assessing the risks relevant to their businesses. The BBP Executive have reviewed the full range of risks and opportunities disclosed by BBP members to date. The distribution of risks and opportunities by category is presented in Figure 20.

From the analysis, it appears that disclosure is focused on risks over opportunities, in particular transition risks, suggesting that members have a better understanding of how to measure and report on this. However, this does not necessarily reflect the actual magnitude of the risks to the business, rather their ability to assess, measure and report. It may also reflect short-termism in business risk reporting and the relationship to business drivers, with immediate policy and legal risks featuring more than chronic physical risks.

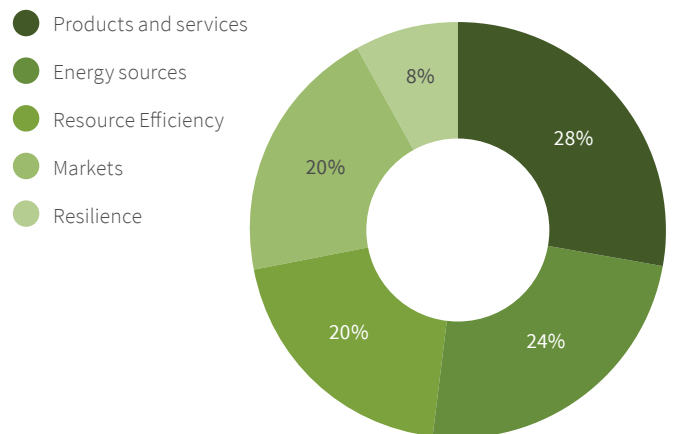
Figure 20: Distribution of risks and opportunities by TCFD category from BBP member TCFD disclosures



Climate Related Risks (n=89)




Climate Related Opportunities (n=30)



The TCFD recommends that businesses provide “a description of their risks and opportunities by sector and/or geography, as appropriate.” In one example from SEGRO³⁷ (Figure 21) the business reports on the distribution of physical climate risks by country, furthermore, highlighting how priority assets will be identified for each risk.

Figure 21: Example of reporting of climate-related risks and opportunities by country (SEGRO)



Climate Impact	High risk	Medium Risk	Low Risk	Priority Assets
Extreme heat events	Italy, Spain	UK, France, Poland, Czech Republic, Germany, Netherlands	–	Sites which are more exposed to higher wind speeds, in open terrain, and/or close to the sea front.
Chronic increase in average temperature	Italy, Spain, France	Germany	Netherlands, Poland, UK	
Flood risk	Poland	UK, Italy, Spain	Germany, Netherlands, Czech Republic	Sites where city infrastructure is reaching capacity and on-site attenuation is critical.
Change in precipitation patterns	Germany, Poland	Netherlands, Czech Republic, UK	France, Italy, Spain	
Water stress	–	Italy, Spain	Poland, UK, Czech Republic, France, Germany	Large logistics sites with landscaping strategy in place, including biodiversity elements. Sites in southern regions (depending on the country this becomes a priority mostly mid-century).
Extreme weather	–	Netherlands, Germany, Czech Republic, Poland	UK, France, Italy, Spain	Sites which are more exposed to higher wind speeds, in open terrain and/or close to the sea front.


3. HOW ARE YOU USING CLIMATE-RELATED SCENARIOS?

The third recommended disclosure under the TCFD’s strategy pillar involves describing the resilience of the business’s strategy under different climate-related scenarios. This is one of the most challenging aspects of the TCFD. It requires a grasp of large datasets and complex modelling, but also the ability to think creatively about what a 1.5°C, 2°C or >4°C warmer world will be like in terms of weather events, trading conditions and the behaviors of occupiers, building users and regulators. While the underlying modelling may be complex it is important that the findings are communicated in a way that is understandable and demonstrates its usefulness as a risk mitigation tool. One of the ways to do this is to shape scenarios into a clear narrative format – an outlook of how the years and decades ahead might play out and the challenges and opportunities that this might present.

As part of their climate resilience strategy, BBP member Lendlease have created four climate scenarios (titled Resignation, Polarisation, Paris Alignment and Transformation) (Figure 22). Each scenario is presented as a one-pager detailing how societal and financial conditions ranging from carbon pricing and changing business models, through to consumer and civic action, might define future trading conditions. This is then brought back to the business by considering how Lendlease’s development, construction and investment activities might be adversely or positively impacted. As well as creating a clear story, Lendlease make the assumptions and datasets underpinning the scenarios clear by sharing their [full list of references](#) and [indicators](#).

A series of further examples are provided in Figure 23. Hammerson’s scenarios – which include ‘Steady Path to Sustainability’ and ‘Late Policy Action’ enable the reader to conceptualise the journey to 2050 through the description of broad themes. Abrdn³⁸ use the scenarios developed by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS)³⁹. LGIM’s Destination@Risk model provides a clear outline of the objectives, variables, and outputs of the models such to undertake scenario testing. Finally, Invesco’s TCFD report includes analysis of the impact on asset value of three different climate scenarios – disorderly transition, orderly transition and ‘Hot House World’.⁴⁰

Figure 23: Example of BBP member scenario and risk analyses for Hammerson (top), abrdn (middle left), LGIM (middle right), and Invesco (bottom)



SCENARIO 1: STEADY PATH TO SUSTAINABILITY (1.5 °C BY 2100)
A summary of what Hammerson’s operating environment could look like under this scenario

Climate:
Global warming limited to around 1.5°C above pre industrial levels by 2100.

Societal approach to climate:
Globally co-ordinated decarbonisation efforts commence in a meaningful way in the early 2020s and are consistently pursued through to net zero emissions by 2050.

Economy:
The world makes a gradual but continual shift away from consumerism and towards a wider sense of prosperity and well being, resulting in lower economic growth.

For the Steady Path to Sustainability, many of the identified risks are assessed as materialising steadily through the 2020s with a generally slow onset, such that the Group can adapt its strategy accordingly. The two risks with the highest impact in this scenario relate to climate-related regulation and changes to customer preferences. Physical risk exposure is deemed to be low.

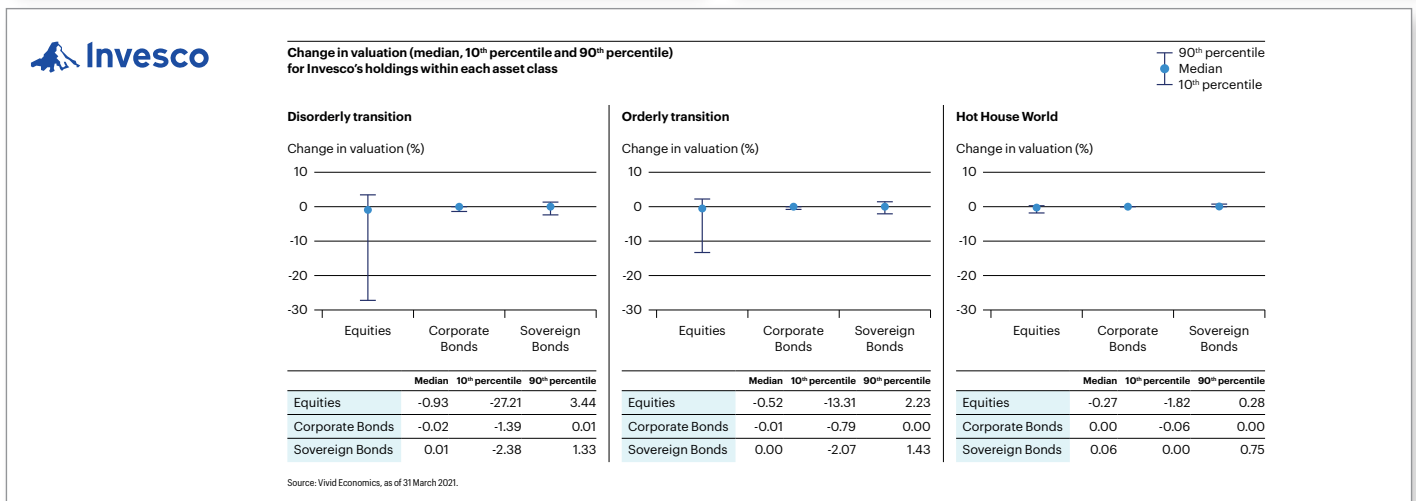
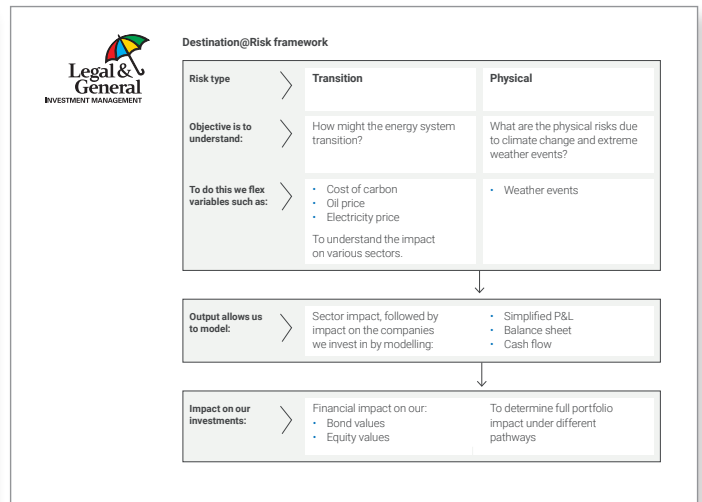
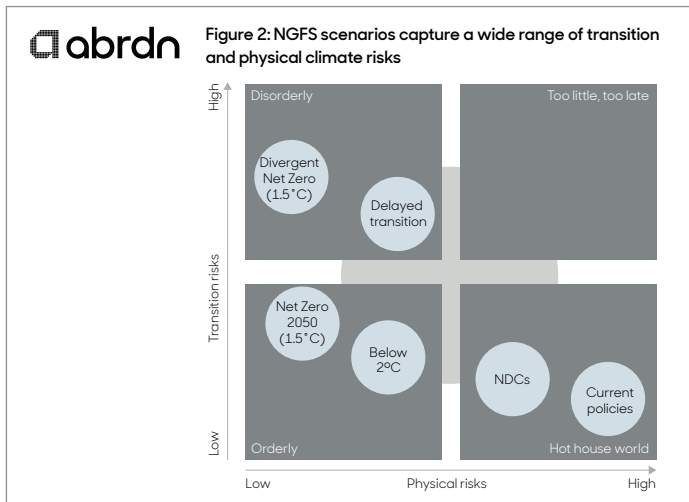
SCENARIO 2: LATE POLICY ACTION (2 °C BY 2100)
A summary of what Hammerson’s operating environment could look like under this scenario

Climate:
Global warming limited to around 2°C above pre industrial levels by 2100.

Societal approach to climate:
Delayed disorderly transition to low carbon which results in widening inequalities.

Economy:
A delayed transition to a low carbon economy requires severe policy implications which results in divergent outcomes on both a micro and macro economic level.

For the Late Policy Action scenario, many of the identified risks are assessed as crystallising in quick succession in the early- to mid-2030s. Almost all the risks have a higher impact and likelihood under this scenario. The risks with the highest impacts include climate-related regulation, macro-economic shocks and policies targeting resource use. The Group’s exposure to physical risks is generally greater under this scenario though these have been assessed initially as low in the Group. The strategy would be less resilient under this scenario but there would be opportunities to adapt.



Risk Management

The purpose of the Risk Management section is to show how the business identifies, evaluates and manages climate related risks and opportunities.

It is also where the business shows how climate change management is integrated into the business’s wider approach to risk.

TCFD recommended disclosure for Risk Management

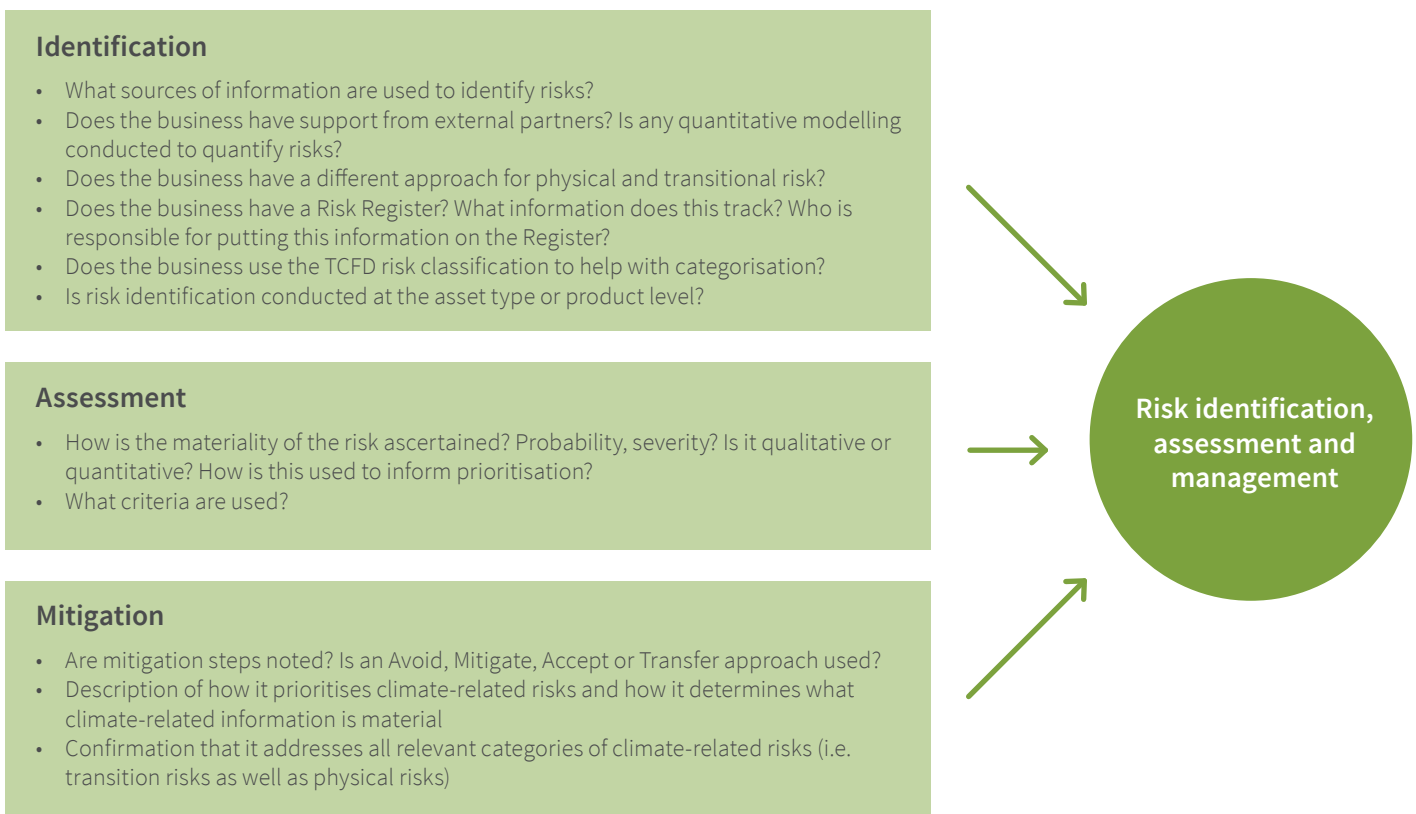
3a	Identifying risks	Describe the organisation’s processes for identifying and assessing climate related risks.
3b	Managing risks	Describe the organisation’s processes for managing climate related risks.
3c	Integrating risks	Describe how processes for identifying, assessing, and managing climate related risks are integrated into the organisation’s overall risk management.

A review of BBP member disclosures identified two key themes for effective disclosure:

1. WHAT ARE THE SPECIFICS OF YOUR RISK MANAGEMENT PROCESS?

Similarly, to the Governance section, it is important to use this section to explain how risks move from outside the business to being captured on risk registers, evaluated, and managed. Figure 24 lists a series of questions addressed in the TCFD disclosures of BBP members to support this aim.

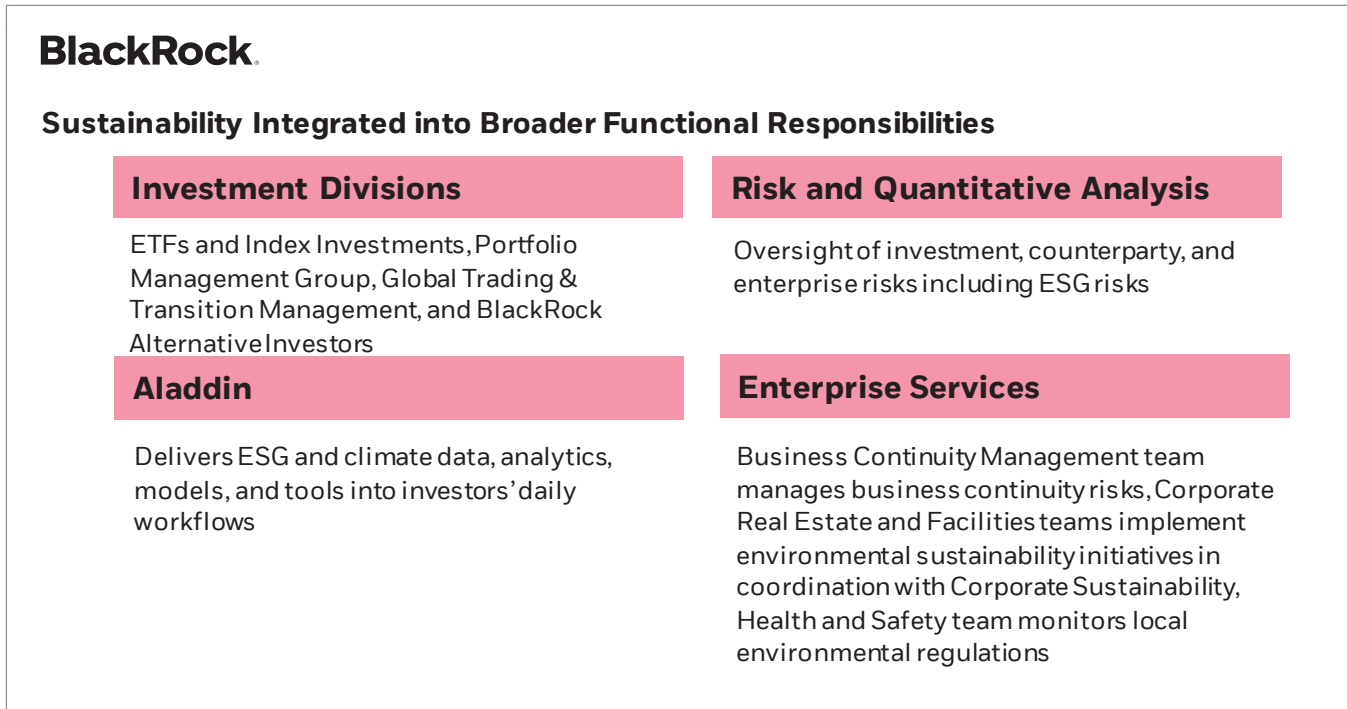
Figure 24: Recommended specifics of risk management processes



2. WHAT IS YOUR RISK MANAGEMENT ORGANISATIONAL STRUCTURE?

The third TCFD disclosure in this area is around the integration of climate related risks into overall risk management processes. Figure 25 includes examples from BBP members, including Blackrock⁴¹ and Workspace⁴².

Figure 25: Examples of risk management organisational structures for Blackrock (top) and Workspace (bottom)



Metrics and Targets

The purpose of the Metrics and Targets section is to show how the business defines and measures its success in managing climate-related issues. This is also where the business describes how it sets targets that are specific and measurable using robust methodologies.

TCFD recommended disclosure for Metrics and Targets

4a	Metrics	Disclose the metrics used by the organization to assess climate related risks and opportunities in line with its strategy and risk management process.
4b	Carbon emissions data	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
4c	Targets	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

A review of BBP member disclosures identified two key themes for effective disclosure:

1. ARE YOUR METRICS MEANINGFUL?

A review of the TCFD disclosures of 30 BBP members identified a huge range of metrics spanning energy, carbon, water and waste, physical climate risk, building certification, investment approaches and other areas (Figure 26). From a review of guidance in this space, and the disclosures of BBP members, it is recommended that reporting metrics are selected which meet the criteria outlined in Figure 26.

Figure 26: Recommended criteria for climate-related metrics

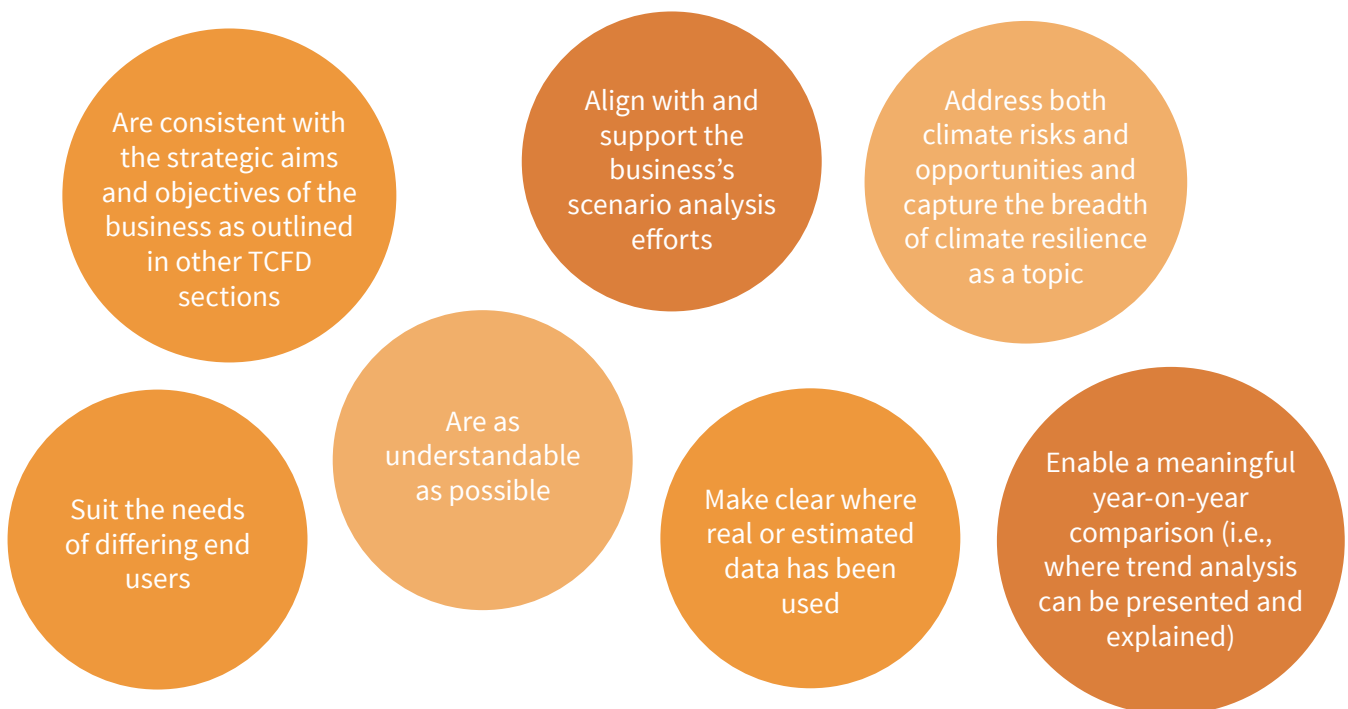


Figure 27 provides a summary of metrics reported by BBP members in TCFD disclosures.⁴³ For those businesses yet to agree on their reporting metrics, or considering adapting them, this Figure provides examples.

Carbon emissions data for Scope 1, 2 and 3 was disclosed by all reporting businesses. This is a direct recommendation of the TCFD for businesses in all sectors. For most businesses disclosing Scope 1 and 2 emissions is a legal requirement or standard practice. The Scope 3 emissions disclosed were found to differ significantly in scope between businesses. Some businesses choose to disclose intensity-based rather than absolute figures. The denominator used for intensity figures ranged from floor area to number of full-time employees to revenue.

Around one quarter (24 per cent) of TCFD-reporting BBP members disclose their Weighted Average Carbon Intensity (WACI). This is a direct recommendation of the TCFD; however, this metric has been noted by some as inappropriate for real estate given that it is typically normalized by revenue, rather than floor area. Businesses disclosing WACI tend to be investment managers with diverse portfolios of assets beyond real estate.

Figure 27: Summary of metrics reported by BBP members in TCFD disclosures

Carbon	<ul style="list-style-type: none"> • Carbon emission data • Weighted average carbon intensity (WACI) • Carbon intensity • Embodied Carbon intensity of major developments (kg CO₂e per sqm) • Carbon intensity of transport by visitors
Energy, water and waste	<ul style="list-style-type: none"> • Total energy consumed • Whole building energy intensity • Water consumption • Waste data • Building water intensity • Electricity from renewable sources • Energy reduction
Building certification	<ul style="list-style-type: none"> • Number of LEED / BREEAM certifications • EPC ratings – percentage of portfolio • Proportion of gross rental income from BREEAM certified assets • Buildings under management that obtained an energy rating in SASB Disclosures
Investment	<ul style="list-style-type: none"> • Investment in green assets • ESG Screened AUM • Return of ESG funds • Energy price forecasts • Climate Value-at-Risk (Climate VaR) • Total Investment Stewardship Engagements on Environment Related Issues • Investment Stewardship Team Size
Physical climate risk	<ul style="list-style-type: none"> • High flood risk assets with management plans • Flood risk distribution of portfolio for fluvial flooding, pluvial flooding, groundwater flood risk • Portfolio at high risk of flooding • Weather-related losses • Percent of fresh water withdrawn in regions with high water stress
Biodiversity	<ul style="list-style-type: none"> • Standing assets with high biodiversity stakes to implement a biodiversity action plan • Development projects to implement a biodiversity action plan
Other	<ul style="list-style-type: none"> • Corporate engagements • Employees working from ISO 14001-registered locations • Number of assets in which HVAC systems use HCFC coolants • Portfolio Warming Potential (deg C) • Revenue from energy and sustainability services • Floor area and number of buildings under management provided with energy and sustainability services • Estimated annual savings from energy efficiency measures • Investments in energy efficiency measures implemented in the year • Development projects significantly connected to public transport solutions • Visitors to access Group assets by sustainable means of transport • Tonnes of CO₂e from leaked refrigerant

2. HOW ARE METRICS LINKED TO REMUNERATION?

A test of the true importance of metrics is whether they are incorporated into decisions around pay. Figure 28 provides examples of BBP members linking employee remuneration to climate-related metrics and targets.^{44, 45, 46, 47, 48}

Figure 28: Examples of BBP members linking employee remuneration to climate-related metrics and targets

“Our commitment to address climate change risks is embedded across the business with climate-related targets linked to employee remuneration, including our science-based carbon reduction target, energy efficiency and embodied carbon from new developments.”

Landsec, Sustainability Performance and data Report 2021



“The Committee is aware of the importance of including our sustainability objectives and targets, where appropriate, in our management incentive framework and these are already included within our annual bonus performance measures.”

Shaftesbury, Annual Report 2021

Shaftesbury

“Performance against our science-based carbon targets form a part of our Executive Directors’ remuneration.”

Derwent London, Responsibility Report 2020

**DERWENT
LONDON**

“All investment staff of the Investment Manager are required to have ESG related performance objectives.”

Schroder Real Estate, Schroder UK Real Estate Fund Annual Report and Consolidated Financial Statements (2021)

Schroders

“The [Remuneration] Committee has set appropriate ESG/strategic measures based upon the achievement of objectively measurable sustainability, customer satisfaction and employee engagement targets.”

GPE, Annual Report y/e March 2022

GPE.

“We have established new investment appraisal policies and set internal targets associated not only with reducing emissions but also working with our customers and supply chain to achieve greater visibility of those emissions. These targets will, from 2022, be integrated within a new responsible SEGRO element of the bonus metrics throughout the organisation.”

SEGRO, Annual Report & Accounts 2021

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