

The Bank of England's climate-related financial disclosure 2023

The Bank published its climate-related financial disclosure in July 2023, which sets out the Bank's approach to managing the risks from climate change across its policy functions and operations.

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Content

Foreword

Executive summary

Governance

Strategy

Risk management, metrics and targets

1: Governance

Court of Directors' oversight of the Bank's management of climate-related risks

Management's role in assessing and managing climate-related risks

2: Strategy

The Bank's approach to climate change

The Bank's work to meet its strategic goals

3: Risk management, metrics and targets

Key climate-related risks in the Bank's financial operations

Data and metrics

Sovereign asset holdings

Corporate Bond Purchase Scheme (CBPS)

Key climate-related risks to the Bank's physical operations

Annexes

Foreword

Climate change affects our world, our economy and our financial system. This disclosure sets out our assessment of the climate-related risks, which impact our policy function and internal operations, and our approach to managing those risks.

We have reported on the progress made by banks and insurers against our climate-related supervisory expectations; published the results of our Climate Biennial Exploratory Scenario; convened a research conference and subsequently published a report to explore links between climate and regulatory capital; and set out our latest thinking on the macroeconomic impacts of climate change.

At the same time we continue to make progress in managing the climate risks to our internal operations. Our physical operations remain on track to achieve the Bank's target to reduce emissions by 63% in 2030 from 2016 levels consistent with limiting the rise in global average temperatures to 1.5°C above pre-industrial levels. And analysis of our financial operations has been improved, enhancing the range of forward-looking scenario-based analyses we use to better assess the exposure of our investment portfolios to climate risk.

Central to our climate disclosure work this year is the publication of our first Climate Transition Plan (CTP), which will be issued alongside this disclosure and our Annual Report. We are using it to both announce our commitment to reduce emissions from our physical operations to net zero by 2040 and set out our approach to deliver those reductions. The publication marks the culmination of a multi-year project to develop a credible and ambitious transition plan for the Bank. It is, however, only the beginning of a long term, large scale, iterative process, which will see the CTP evolve to reflect Government climate policies, maturing transition planning frameworks, technological advances and emerging best practice.

Similarly, in light of the newly released International Sustainability Standards Board climate disclosures, we will review our approach to this climate disclosure in future years. Looking ahead more generally, we will continue to focus our limited resources on climate issues that have the most impact on our objectives. We plan to advance our understanding of the financial stability risks, support the orderly transition toward a net-zero economy and engage domestically and internationally to ensure a co-ordinated approach on climate change.

Ben Stimson

Chief Operating Officer of the Bank of England

Executive summary

Climate change and the transition to a net-zero economy are relevant to the Bank of England’s mission to promote the good of the people of the United Kingdom by maintaining monetary and financial stability. The physical effects of climate change and the transition to a net-zero economy can create financial risks and economic consequences, which affect:

- the safety and soundness of the firms the Bank regulates;
- the stability of the financial system; and
- the economic outlook in a way that could have a bearing on the appropriate monetary policy stance.

The Bank’s approach to climate change is therefore to play a leading role, through its policies and operations, in ensuring the financial system and the Bank itself are resilient to the risks from climate change and in understanding its macroeconomic implications. Where there is alignment with the Bank’s objectives and legal framework, it acts to support the transition to a net-zero emissions economy.

This climate disclosure sets out the work the Bank does on climate change in pursuit of its core mission, and reports on the emissions from its own physical and financial operations, and the climate risks the Bank is exposed to. Over the past year key Bank activities included:

- publication of the results of its Climate Biennial Exploratory Scenario (CBES) exercise;
- continued active supervision of banks^[1] and insurers against its climate expectations and reporting on the progress observed;
- the convening of a research conference and publication of a report to explore links between climate and regulatory capital; and
- setting out the latest thinking on the macroeconomic impacts of climate change.

The Bank is continuing to make progress in reducing greenhouse gas (GHG) emissions from its own physical operations – which fell by 37% in the current year – and is on track to reduce selected^[2] emissions by 63% from 2016 to 2030, consistent with limiting the rise in global average temperatures to 1.5°C above pre-industrial levels.

The Bank has also developed a Climate Transition Plan (CTP), which sets out its approach to deliver its commitment to reduce emissions from its own physical operations to net zero by 2040 – its Physical Greenhouse Gas Emissions Target (PGGET). The Bank is on track to meet its PGGET and has published the CTP alongside this disclosure.

The Bank has committed to publish annual climate disclosures. This is the fourth climate disclosure the Bank has produced, setting out the key climate-related developments in the year to 28 February 2023. It builds on the Bank's third climate disclosure by reflecting:

- the progress the Bank has made on its climate work plan over the past year;
- advances in climate data and modelling applied to its financial asset portfolios;
- progress on reducing emissions from its physical operations; and
- progress in the domestic and international climate agenda.

In response to these developments, the Bank has refreshed the goals, which operationalise its climate strategy, and the priorities which underpin it.

To respond to the broad range of climate-related risks (climate risks) to its core monetary and financial stability mission in an effective and strategic manner, the Bank has designated climate change as one of its seven strategic priorities covering the four-year period to February 2025. By advancing this work, the Bank will fulfil its obligations under its objectives and remits, focusing its limited resources on issues that have the most impact on those objectives and remits, as well as where the Bank can make the biggest contribution domestically and internationally.

As with the Bank's previous climate disclosures, this year's disclosure follows the structure recommended by the Financial Stability Board's (FSB's) Task Force on Climate-related Financial Disclosures (TCFD), covering four key elements: governance; strategy; risk management; and metrics and targets.

Governance

Climate risks are incorporated within the Bank's internal governance and risk management frameworks, complemented by climate-specific processes where appropriate. As part of this, climate risks to the achievement of the Bank's mission are discussed at the Bank's senior executive committees prior to decisions being implemented by management across the Bank. Climate risks are also subject to additional governance processes due to the inclusion of climate change as one of the Bank's seven strategic priorities.

At a management level, the Bank's climate work is led by two Executive Sponsors: Sarah Breeden (Executive Director for Financial Stability Strategy and Risk and member of the Financial Policy Committee) covers the Bank's policy functions and Ben Stimson (Chief Operating Officer) covers the Bank's physical operations. Climate change is relevant to many parts of the Bank; from sourcing polymer for banknote production to the setting of risk management expectations for banks and insurers regulated by the Bank, through the Prudential Regulation Authority (PRA). For that reason, the Bank has an Executive Director-level cross-Bank steering group to discuss the design, implementation and execution of the Bank's climate strategy and work plan, as well as broader climate or environmental-related issues of relevance to the Bank.

Strategy

The objective of the Bank's work on climate change is to play a leading role, through its policies and operations, in ensuring the financial system and the Bank itself are resilient to the risks from climate change and in understanding its macroeconomic implications. Where there is alignment with the Bank's objectives and legal framework, it acts to support the transition to a net-zero emissions economy. This contributes towards advancing the Bank's statutory objectives for financial and monetary stability as set out in the remit and recommendations letters to the Bank's policy committees.[3]

The Bank's climate strategy is built around five key goals, which have been refreshed for 2023/24 to reflect progress the Bank has made and broader shifts in the domestic and international climate agenda.



Progress has been made against the 2023 goals over the past year, including publication of the results of the Bank's CBES exercise for major UK banks and insurers, issuance of supervisory guidance on progress that banks and insurers have made against the Bank's supervisory expectations on climate, and development of the Bank's first CTP, setting out the Bank's strategy for reducing emissions from physical operations to net zero by 2040.

Risk management, metrics and targets

The Bank is itself exposed to climate risks across both its physical operations (eg due to physical risks to its buildings) and its financial operations (eg financial asset portfolios held for monetary policy purposes). This climate disclosure sets out the Bank's approach to measuring and managing these risks.

Since the last climate disclosure, the Bank's critical metrics for climate risk have been refreshed to reflect developments in the Bank's analysis of climate risk from financial and physical operations, including publication of the Bank's CTP. The Bank's critical metrics for climate risk are reported quarterly to the Bank's executive and non-executive risk committees.

The Bank's financial operations

The Bank continues to demonstrate best practice in climate risk reporting on its financial asset holdings, by disclosing analysis of both its sovereign and corporate asset holdings and enhancing its analysis to align with the latest guidance.

Static, backward-looking measures of the climate risks in the Bank's financial operations have remained broadly stable. For example, **the Weighted Average Carbon Intensity (WACI) of the Bank's sovereign bond portfolios remained largely unchanged** between 28 February 2022 and 28 February 2023, suggesting no material change in transition risks.

Such measures are helpful in comparing climate risks across different portfolios – and show that **the transition and physical risks associated with the Bank's holdings are materially lower than those in a G7 reference portfolio**. But to be decision-useful (a key goal of the TCFD), climate risk metrics need to be forward-looking, and expressed in terms that can be integrated into the holistic financial risk frameworks that inform day-to-day risk management decisions across the financial system.

The methodologies for calculating such measures remain relatively new, and hence it will be some time before full risk integration is possible. To give an indication of direction of travel, however, **this report contains forward-looking scenario analysis. This uses projections to estimate potential financial impacts across the Bank's portfolios in future. It differs from point in time metrics, which provide proxy measures of financial risks today, but do not project into the future**. Among other things, new experimental metrics suggest:

- The value of the Bank's sovereign bond holdings could fall by up to 6.8% in the most adverse climate scenarios. This assumes that the future path of interest rates consistent with such an adverse scenario is immediately reflected in the bond prices. However, the pathway of interest rates across climate scenarios is uncertain and will be determined by the responses of both financial markets and central banks.
- Carbon budget pathways for sovereign issuers imply that the Bank's sovereign asset portfolios are aligned with the 2°C Paris goal, but not with the 1.5°C ambition.
- In some adverse transition risk scenarios, the debt service ratios of households owning poorly insulated homes could increase by 9 percentage points, compared to a less than 1 percentage points for households owning the most efficient properties. These transition risks might impact borrowers' mortgage affordability, and feed through to increased risks to mortgage collateral that the Bank accepts.

Following the Monetary Policy Committee's (MPC's) decision to begin exiting quantitative easing in February 2022, holdings in the Corporate Bond Purchase Scheme (CBPS) have now been almost completely unwound, through a combination of maturities and sales. The total climate-related losses that the Bank could suffer have therefore declined. The

framework introduced in November 2021 to 'green the CBPS' was only in operation for a short period. **Nevertheless, application of the framework to reinvestment operations undertaken between November 2021 and January 2022 successfully reduced transition risks of the Bank's corporate bond holdings.** It is encouraging to see other organisations, including the European Central Bank, subsequently adopted similar frameworks in their own operations.

The Bank's physical operations

This year the Bank's reported carbon footprint (6,150 tonnes of carbon dioxide equivalent (tCO₂e)) is the lowest since the Bank's target was set in 2015/16, having fallen by 37% (3,666 tCO₂e) compared to 2021/22, and by 69% (13,977 tCO₂e) compared to the baseline year of 2015/16, against which the Bank measures progress.

The most significant contribution to the emissions reduction relative to 2021/22 was a decrease in the number of banknotes printed (4,452 tCO₂e). While the Bank works with suppliers to encourage them to reduce the carbon intensity of the polymer substrate used in banknote production, absolute emissions are driven by the number of banknotes printed, which is responsive to demand and is therefore variable.

The reduction relative to the baseline year (2015/16) was driven primarily by the Bank's permanent move to renewable sources of electricity (5,563 tCO₂e), reduced production of banknotes (3,585 tCO₂e) and lower levels of business travel (2,583 tCO₂e). While emissions from business travel are expected to rise as the impact of Covid-related restrictions on travel diminishes, the Bank anticipates that it is unlikely to revert to 2019/20 levels due to new ways of working. The Bank's move to a contract for the supply of renewable electricity is a permanent change and there is an expectation that it will continue to use renewable sources of electricity supply in future periods.

The majority of the Bank's carbon footprint this year came from polymer substrate used in the production of banknotes (34%), natural gas usage (34%), and air travel (28%). Although gas usage will remain a key emission in the medium term, it has fallen significantly in the past year (by 29%) and the Bank is actively working to minimise emissions by taking steps to optimise gas consumption and exploring options for decarbonising its heating systems in the longer term.

The Bank has published its first [CTP](#) alongside this disclosure. It sets out the Bank's approach to reduce carbon emissions from physical operations^[4] to net zero by 2040 – the Bank's PGGET.

The Bank is on track to meet its PGGET as well as its '2030 Target' to reduce selected^[5] GHG emissions by 63% from 2015/16 to 2030. Both targets align with the reduction in emissions needed to be consistent with limiting the rise in global average temperatures to 1.5°C above pre-industrial levels.

1: Governance

Summary

- Climate-related considerations form a key component of the Bank's mission, functions and operations. As such, they are embedded in its governance and risk management functions.
- The Bank's Court of Directors (Court) and its Audit and Risk Committee (ARCo) oversee the Bank's management of climate risks. This is supported by the Bank's executive committees, steering groups and management team who have established responsibilities for climate matters.
- At a management level, governance over the Bank's climate work is led by the Bank's two Executive Sponsors for climate change. Of these, one has been allocated the Senior Management Function responsible for the financial risks from climate change.
- Decisions on climate matters are supported by regular management reporting on climate strategy, risk management, metrics and targets.

The Bank's organisation-wide governance framework has been designed to be appropriate to the nature, scale and complexity of its operations. As a source of risk integral to the Bank's mission, functions and operations, climate-related considerations are embedded in its approach to governance. This section sets out how the governance of the Bank's climate-related work is applied.

Court of Directors' oversight of the Bank's management of climate-related risks

The Bank's management of climate risks is overseen by its Court. Their role is supported by established responsibilities for climate matters, which have been allocated across the Bank's executive committees, steering groups, and management team. Decisions are supported by regular management reporting on climate strategy, risk management, metrics and targets.

Acting as a unitary board, Court sets the Bank's strategy and budget, and takes key decisions on resourcing and appointments. Court is responsible for matters that concern the Bank as an organisation, while policy responsibilities are reserved for policy committees. ARCo, a sub-committee of Court, assists Court in its responsibility for maintaining effective risk management, internal controls and financial reporting.[6] In line with these responsibilities, both Court and ARCo oversee the Bank's approach to climate risk management and climate disclosure. This year Court has reviewed the Bank's progress against climate risk targets as part of its reviews of this disclosure, the Bank's Climate Transition Plan (CTP) and the Bank's Annual Report.

Executive-level committees are the most senior executive policymaking bodies beneath Court. They review and approve the Bank's climate strategy at least once a year. In doing so, they ensure that the Bank's climate strategy is focused on the aspects that may have the most material implications for the Bank's statutory objectives for monetary and financial stability and is balanced against the Bank's limited resources.[7] The strategy also takes into consideration the impact of climate change on the Bank's broader remit, including recommendations from HM Treasury to each of the Bank's policy committees. Further information on how the climate strategy is based in the Bank's remit is set out in Section 2 and Annex 2.

The Bank's three[8] statutory policy committees are the [Monetary Policy Committee](#) (MPC), the [Financial Policy Committee](#) (FPC), and the [Prudential Regulation Committee](#) (PRC). Each policy committee has a different set of responsibilities. Collectively, they discharge the Bank's statutory functions in relation to monetary policy, financial stability and prudential regulation. All of the three policy committees discuss climate-related factors that are relevant to their respective objectives, as described in Section 2 and Annex 2.

Management's role in assessing and managing climate-related risks

Governance of the Bank's climate-related work at a management level is led by the Bank's two Executive Sponsors for climate change: the Executive Sponsor for the Bank's policy functions (Sarah Breeden, Executive Director for Financial Stability Strategy and Risk and member of the Financial Policy Committee); and the Bank's Executive Sponsor for climate change across the Bank's internal operations (Ben Stimson, the Bank's Chief Operating Officer (COO)). The Executive Sponsors work closely together in order to deliver the Bank's climate work.

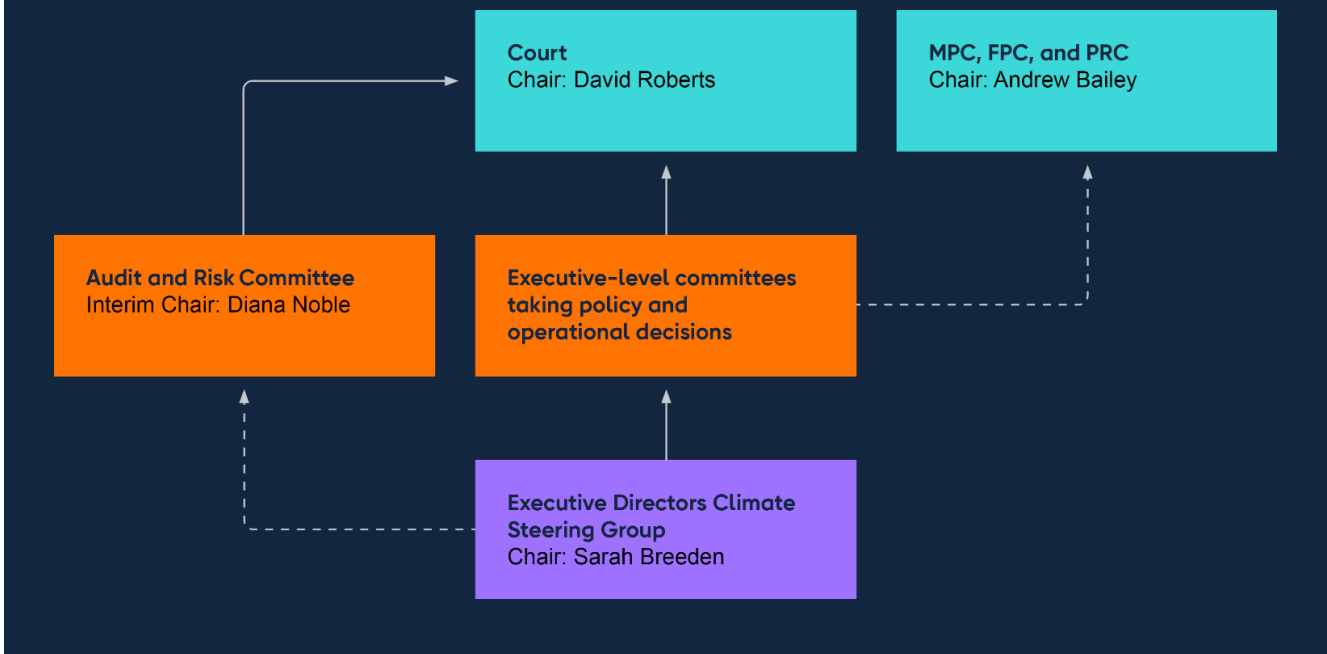
Sarah Breeden has also been allocated the Senior Management Function responsible for the financial risks from climate change (SMF Climate) and is therefore responsible for recommending the Bank's climate change strategy to the executive committees, overseeing its execution, and co-ordinating climate-related work across the Bank. Ben Stimson has responsibilities for climate risks to the Bank's internal operations.

The primary management forum responsible for effective co-ordination on climate-related work across the Bank is the Executive Directors' Climate Steering Group (EDCSG), which is chaired by Sarah Breeden as the SMF Climate. This group acts as a forum for executive directors across the Bank to discuss strategic climate-related issues and has been active in supporting Court and the Bank's executive and policy committees in their work on climate change.

Oversight of the Bank's physical operations carbon strategy is achieved via the executive committees responsible for operational matters, including operational investment, carbon emissions and performance. In line with these responsibilities, Court and the executive committees with an operational focus all have a role in the governance of the Bank's strategy and actions related to carbon emissions and reduction efforts.

To embed consideration of climate change across the Bank's functions, it operates a 'hub and spoke' model. At the centre sits the Climate Hub, a dedicated division of climate specialists, which supports the SMF Climate and implementation of the Bank's climate strategy across the organisation. Each area of the Bank, or spoke, has one or more climate leads responsible for directing climate-related work within their area, and co-ordinating with the Climate Hub and across other spokes. This balances development of climate expertise with embedding consideration of climate risk across the Bank.

Figure 1.1: Organogram illustrating Bank committees and steering groups relevant to the governance of the Bank’s work on climate change (a) (b) (c) (d) (e) (f)



Source: Bank of England.

(a) While reserving certain key decisions to itself, Court has delegated to the Governor the day-to-day management of the Bank. The Governor delegates certain decisions to individuals or committees within the Bank and takes advice on others. The principal forums for such advice are the executive-level committees.

(b) Ben Stimson is COO and Executive Sponsor for climate change across the Bank of England’s internal operations. He jointly signs off the Bank’s climate disclosure, together with the SMF Climate and Chief Financial Officer (CFO).

(c) Sarah Breeden is Executive Director of Financial Stability Strategy and Risk, and Executive Sponsor for climate change across the Bank of England’s policy functions. She also holds the Bank’s Senior Manager Function responsible for the financial risks from climate change. Sarah jointly signs off the Bank’s climate disclosure, together with the COO and CFO.

(d) Afua Kyei is the Bank’s CFO and is responsible for the Bank’s Annual Report. She jointly signs off the Bank’s climate disclosure, together with the COO and SMF Climate.

(e) ARCo is a sub-committee of Court.

(f) The EDCSG is a cross-Bank steering group to facilitate discussions on climate-related work. The EDCSG can make recommendations to, and review papers prior to going to, the Bank’s executive-level committees, ARCo, and other Bank committees where relevant. The EDCSG is not a formal Bank committee or decision-making body.

2: Strategy

Summary

- Climate change and the transition to a net-zero economy present risks to the Bank's mission of monetary and financial stability, because they create financial risks and economic consequences. The Bank's climate strategy is designed to address those risks by focusing the Bank's work on those areas that might have the most material impact on that mission.
- The Bank has made progress on its climate strategy, including publication of the Climate Biennial Exploratory Scenario (CBES) exercise exploring risks in banks, insurers and the wider financial system, issuance of supervisory guidance on progress that banks and insurers have made against the Bank's supervisory expectations on climate, hosting of a conference and publishing of a report to further discussion of the links between climate and regulatory capital, continued exploration of the macroeconomic implications of climate change and development of the Bank's first CTP.
- The Bank continues to engage with a wide range of stakeholders on its climate work, including with the public through citizens' panels and regional visits, and with young people through the Bank's Youth Forum.
- Looking forward, the Bank has refreshed the five goals underpinning its climate objective for future periods, to reflect progress made to date.

The Bank's approach to climate change

Climate change is relevant to the Bank's mission^[9] as the physical effects of climate change (eg sea-level rises and more frequent severe weather events) and the transition to a net-zero economy (eg changes in government policy, consumer preferences, and technology) create financial risks and economic consequences.

These risks and consequences can affect the safety and soundness of the firms the Bank regulates, the stability of the wider financial system, and the economic outlook in a way that could have a bearing on the appropriate monetary policy stance.^[10] Reflecting this, responding to the challenge of climate change is one of the Bank's seven strategic priorities for 2022 to 2025 (detailed in the Bank's [Annual Report](#)).

The objective of the Bank's work on climate change is to:

‘Play a leading role, through its policies and operations, in ensuring the financial system and the Bank itself are resilient to the risks from climate change and in understanding its macroeconomic implications. Where there is alignment with the Bank’s objectives and legal framework, it acts to support the transition to a net-zero emissions economy.’

The Bank builds this resilience by ensuring that climate-related financial risks are proactively identified and effectively managed through its supervisory and policy functions (eg its supervision of banks and insurers) and the Bank’s management of its own operations (eg the carbon footprint of its buildings, and the Bank’s market operations). The Bank also works to understand the macroeconomic implications of climate change on monetary stability. In doing so, the Bank’s work on climate change contributes towards advancing the ‘primary’ objectives of the Bank’s policy committees to maintain monetary and financial stability, and to promote the safety and soundness of persons authorised by the Prudential Regulation Authority (PRA).

In addition to the primary objectives, the Bank also has ‘secondary’ objectives which it works to advance to the extent that in doing so it does not undermine its primary objectives. The Bank’s work on supporting the transition to net zero aligns with its secondary objective of supporting the Government’s economic policy. The Government’s economic policy – and the Bank’s role in supporting this – is set out in the remits and recommendations that HM Treasury provides to the Bank’s three policy committees^[11] – the MPC, the FPC, and the PRC. HM Treasury updated each policy committee’s remit and recommendations in 2022.

For further information on the Bank’s policy committees, the remit setting process, and a summary of the climate-related elements of the committees’ remits, please see Annex 2.

The Bank needs to use its limited resources in an efficient way, so focuses its work on those areas that may have the most material impact on its objectives. In setting the Bank’s climate strategy, the Bank prioritises those areas that might pose the most material risks to its primary monetary and financial stability objectives. In doing this it recognises that it is not possible to progress work in all areas, so, where relevant, strategic decisions focus on both where the Bank will and will not undertake work.

The Bank collaborates with a wide range of international and domestic stakeholders to undertake work and progress the collective understanding of the risks from climate change. This includes through the Network for Greening the Financial System (NGFS), international standard setters such as the Financial Stability Board (FSB), Basel Committee on Banking Supervision (BCBS) and International Association of Insurance Supervisors (IAIS), and broader stakeholder groups. Further information on some of the groups involved in this work are set out in the [2022 disclosure \(Box A\)](#).

The Bank’s work to meet its strategic goals

The Bank’s climate strategy is built around five key goals. In April 2023 these goals were refreshed to reflect progress the Bank has made and broader shifts in the domestic and international climate agenda. The goals are set out in Figure 2.1.

Figure 2.1: The Bank’s five strategic goals for the current year and future periods



The Bank’s strategic work plan for 2023/24 has been developed around the new goals. The original goals underpinned the progress the Bank has made over the past year, which we report on in this disclosure. Below we discuss the progress made against the original goals over the last 12 months.

1. Ensuring the financial system is resilient to climate-related financial risks

The Bank is using its micro and macroprudential toolkits to build resilience to climate-related financial risks at both an individual firm and system-wide level.

In April 2019, the PRA became the first prudential regulator to publish a comprehensive set of **supervisory expectations** for how banks and insurers should enhance their approaches to managing the financial risks from climate change. Subsequently it has worked to help firms

respond to those expectations,^[12] setting a deadline for firms to embed them as far as possible by the end of 2021.

On 1 January 2022, the PRA's approach switched from monitoring implementation to actively supervising against those expectations, and in October 2022 a [letter to Chief Executive Officers](#) (CEOs) provided thematic feedback on firms' progress in responding to Supervisory Statement 3/19 (SS3/19). This included examples of observed practice, highlighting implementation practices that the PRA considered more and less effective, and reiterating that approaches should be proportionate to the nature of a firm's business, scale of the risks, and the complexity of operations.

Overall, the PRA observed that, across the sector, banks and insurers have taken concrete and positive steps to implement the supervisory expectations. Levels of readiness and embedding vary, however, and the overall assessment of supervisors is that further progress is needed by all firms. The PRA continues to engage with firms as part of the supervisory cycle to support them in addressing the issues highlighted.


In parallel, the PRA has continued to promote high-quality and consistent accounting for climate change, particularly for banks, where there is a strong interaction between accounting and capital. In its [letter to CFOs](#) sharing thematic findings from its review of written auditor reports for major UK banks, the PRA communicated feedback on observed firm practices and a list of 'key plan elements' to help banks plan to improve the capture of climate risk on their balance sheets.

The Bank published the results of the [2021 CBES](#) exercise in May 2022. The findings indicated that an 'early action' scenario, where policies are introduced in a timely manner to deliver an orderly transition to net zero by 2050, resulted in the lowest costs and greatest opportunities for the financial sector. Other scenarios, where climate risks are higher due to late action or disorderly transition, bring greater costs for the financial sector and greater potential costs for the real economy, including through the withdrawal or increase in price of financial services to certain businesses and households.^[13] Supervisors have engaged with participating firms to provide individual feedback and support them in development of their capabilities in this area.

Building on the Bank's initial findings on the relationship between climate change and regulatory capital requirements for banks and insurers, which were published in the [PRA Climate Change Adaptation Report 2021](#), this year the Bank explored whether changes need to be made to the design, use or calibration of the regulatory capital framework. The Bank hosted a [research conference on climate change and the regulatory capital framework](#) in October 2022 and published a [report](#) in March 2023. The PRA also reviewed

firms' own assessments of their climate-related capital needs in banks' Individual Capital Adequacy Assessment Plans and insurers' Own Risk and Solvency Assessments, feeding back to banks and insurers via the letter to CEOs published in October 2022.

The PRA continues to work jointly with the Financial Conduct Authority to convene the [Climate Financial Risk Forum](#) (CFRF), an industry group established to share best practice on climate issues and accelerate firms' capabilities to address climate change. This year the CFRF published a series of climate-related practical guides and toolkits, which build on their earlier work.

There is also increasing discussion of the potential for changes in the environment beyond those directly attributable to climate change to create financial risks. For example the NGFS supported research^[14] and established a task force on 'Biodiversity Loss and Nature-related Risks'^[15] to explore 'nature-related financial risks' such as biodiversity loss. In line with the FPC's [remit and recommendations letter](#), in the July 2022 [Financial Stability Report](#) they considered the potential relevance of other environmental risks to their primary objective. They concluded that collective understanding of how nature risks could give rise to financial risks is in its infancy globally. The Bank should therefore seek to build its understanding of how environmental risks might give rise to financial risks and consider the potential materiality for UK financial firms and the UK financial system, drawing on others' work as appropriate. To that end, to improve its understanding of nature-related risks, the Bank is engaging with the [Green Finance Institute](#) , the Department for Environment, Food and Rural Affairs and partners to better size the potential UK financial exposures from nature loss and degradation. This project was launched in April 2023.

2. Supporting an orderly economy-wide transition to net-zero emissions

The primary levers for driving an orderly economy-wide transition to net-zero emissions rest with UK Government in setting climate policy. Clarity over the future path of climate policy and implications for different sectors will better allow the UK economy to adjust effectively, and the financial system to support that adjustment, reducing the risks of a later, sharper, and more disorderly transition. However, the Bank's actions to ensure a resilient financial system can in some circumstances catalyse and amplify the effects of UK Government climate policy and support the transition to a net-zero economy.

One of the Bank's primary [roles in the transition to net zero](#) is to understand how different transition pathways could affect the macroeconomy, the stability of the wider financial system, and the safety and soundness of the firms it regulates. Consistent with its financial stability strategy, the Bank aims to ensure that the financial system can facilitate and support vital financial services that the economy requires during the transition to net zero, which contributes to this transition being orderly. The Bank's policy response will be calibrated to address the risks that these pathways pose to its objectives.

As noted above the CBES has provided significant insights on the interplay between transition paths and the build-up of financial stability risks. Following this, the Bank is investing in work to determine how to monitor these risks better over time, including the framework and tools that would be required to support that. This will be an area of increased focus going forward and one that the FPC will be regularly updated on.

This year the Bank has supported UK Government as it developed its 2023 [green finance strategy](#). The Bank has also supported the team that produced the [Review of Net Zero](#); an independent review of the Government's approach to delivering its net-zero target.

The Bank stepped down as chair of the Macrofinancial workstream of the NGFS, passing the role to the European Central Bank. Over the past four years, while chaired by the Bank, the Macrofinancial workstream has developed a set of reference [climate scenarios](#) that have been used by central banks and policymakers around the world.^[16] Although the Bank's tenure as chair of the Macrofinancial workstream ended in 2022, it has continued to be an active participant in the NGFS workstream on Scenario Analysis and Design. In the coming period, this workstream will further develop the scenario toolkit that can be used to develop cross-economy understanding of how climate risks might arise, including over short time frames.

In May 2022, James Talbot (Director of the International Directorate at the Bank) was appointed Chair of the NGFS workstream on Monetary Policy, which focuses on understanding how climate change and climate policies should be considered in relation to the conduct of monetary policy. The workstream began its work by surveying members to understand the extent of their progress and efforts to date on macroeconomic analysis supporting monetary policy formulation and monetary policy operations. Insights from the survey are shaping the workstream's analytical work and the Bank is considering how they might also inform its internal thinking on monetary policy in the context of climate change.^[17]

The Bank has also undertaken work to explore the macroeconomic implications of climate change. In October 2022 an article was published in the Quarterly Bulletin, which set out the Bank's initial thinking on the [possible macroeconomic implications of climate change](#).

The Bank anticipates that individual and sector-level transition plans will assist its role as both a central bank and a financial regulator to identify the risks to firms and insurance policyholders and at the macro-level the systemic risks that may impact the economy as a result of the transition. To that end the Bank continues to be an active observer on HM Treasury's [Transition Plan Taskforce](#) (TPT), which is helping to define the standards for transition plans by establishing robust criteria and the effective use of science-based targets.

In November 2022, the TPT published: a summary of their key recommendations for producing a transition plan; a sector-neutral framework for developing gold-standard transition plans; and implementation guidance.[18]

3. Promoting adoption of effective TCFD-aligned climate disclosure

The Bank has supported the adoption of the climate disclosure framework established by the Task Force on Climate-related Financial Disclosures (TCFD) since its inception, including guidance for central banks published by the NGFS.[19] Climate disclosure is important not only for transparency and for risk management purposes, but also as a way to enable the flow of capital towards investments that are consistent with an orderly cross-economy transition to net-zero emissions. Consequently, climate disclosure is also integral to the UK's legislative commitment to reach net-zero emissions by 2050.

The Bank is supporting the UK Government and other financial regulators in the rollout of mandatory TCFD-aligned climate disclosure requirements across the economy by 2025.[20] When implemented, these requirements would be complemented by the PRA's existing supervisory expectation that banks and insurers should report their climate-related financial risks as part of their public climate disclosures, and where material in their Pillar 3 regulatory disclosures. The wider rollout of climate disclosure requirements are being delivered through a combination of regulations and legislation, as described in the UK [Sustainability Disclosure Requirements](#) [↗](#).

Climate risks are global and therefore the implementation of high quality, comparable and consistent climate disclosure standards across jurisdictions is vital for supporting and promoting the identification, measurement and management of climate risks. In light of this need, the Bank continues to support multilateral work to establish a global baseline for climate risk reporting, for example the work of the [International Financial Reporting Standards \(IFRS\) Foundation's International Sustainability Standards Board](#) [↗](#) (ISSB). On 26 July 2023, the ISSB issued its [inaugural sustainability standards](#) [↗](#), IFRS S1 (General Requirements for Disclosure of Sustainability-related Financial Information) and IFRS S2 (Climate-related Disclosures). The Bank is supportive of the call made in the Net Zero Review for the UK Government to endorse and implement the ISSB standards as soon as possible.

Internationally, the Bank advocates for interoperability between global climate disclosures standards and is contributing to the BCBS's Task Force on Climate-related Financial Risks' (TCFR) development of the Pillar 3 disclosure framework for climate-related financial risks. The framework is intended to complement, and be interoperable with, parallel disclosure initiatives under way by the ISSB and other authorities and is expected to be issued for consultation by the end of 2023.


4. Working towards a timely and co-ordinated international approach to the assessment and management of risks to monetary and financial stability from climate change

The consequences of climate change are global. Therefore, the effectiveness of climate policy and the need for a robust understanding of climate risks and impacts are not solely domestic concerns. They must be delivered in a co-ordinated and timely fashion at an international level. Where international collaboration on climate policy aligns with the Bank's primary objectives of maintaining monetary and financial stability, the Bank engages with other central banks through its roles in international fora, and by working with the UK Government to deliver progress on climate, including through the G7 and G20.

The Bank is a founding member of the NGFS and sits on its steering committee. By February 2023 the NGFS had grown from eight central banks in 2017 to 121 members and 22 observers – representing countries responsible for more than 85% of global greenhouse gas (GHG) emissions and responsible for supervising all global systemically important banks and 80% of the internationally active insurance groups. Through the NGFS the Bank aims to share its own experience, learn from others, and promote consistent and effective responses to climate risks by central banks and supervisors across the world. As noted above, the Bank currently co-leads the NGFS's work on transition plans and chairs the NGFS workstream on Monetary Policy, which aims to progress understanding of how climate change and related policy responses should be considered in relation to the setting and operation of monetary policy.

The Bank provides training to other central banks and regulators on topics including climate-related financial regulation through the Bank's [Centre for Central Banking Studies](#) (CCBS). In 2022, with support from the UK Foreign, Commonwealth and Development Office, the CCBS engaged with Central Bank of Egypt, the Bank of Ghana (alongside 15 West African central banks), Bank Indonesia (alongside eight ASEAN^[21] central banks) and the South African Reserve Bank (alongside sixteen central banks in the region). Specifically, the CCBS provided training on microprudential supervision of climate risks, climate scenario analysis, and climate disclosures as well as convened roundtable discussions on climate risks in these countries.

The Bank participates in the IAIS Climate Risk Steering Group to support insurance supervisors in developing their own scenario analysis, to integrate data collection, and to explore climate-related amendments to the Insurance Common Principles. Victoria Saporta, Executive Director of Prudential Policy at the Bank, is chair of the IAIS. The Bank also co-founded the [Sustainable Insurance Forum](#) [↗] (SIF)^[22] to advance supervisory responses to climate change in the insurance sector across the globe.

The Bank also works closely with HM Treasury to represent the UK in key international fora including in the G7 Finance Track and the G20 Sustainable Finance Working Group (SFWG). Through the SFWG, the Bank is helping to deliver against the [G20 Sustainable Finance Roadmap](#)  published in 2021, seeking the implementation of the transition finance framework developed in 2022, and supporting efforts on mobilising private finance and capacity building.

In addition to these climate-focused fora, the Bank continues to engage in the climate-related workstreams of standard setters and international bodies. For example, engagement included, but was not limited to:

- The BCBS's TFCR's work on identifying the gaps within the Basel framework and potential measures to better capture climate-related financial risks, includes not only the disclosure work referenced above, but also regulatory and supervisory elements. It is also a key forum through which the Bank will advance discussions internationally on its research into the relationship between climate change and regulatory capital requirements.
- The FSB's Standing Committee on Supervisory and Regulatory Cooperation, chaired by the Bank of England's Governor, published: its final report on supervisory and regulatory approaches to climate risks;^[23] a joint report with the NGFS drawing lessons for effective scenario analysis based on various national and regional exercises performed by financial authorities;^[24] and a progress report on climate-related disclosures, reviewing the actions taken by the ISSB in developing the global minimum baseline disclosure standards as well as by individual jurisdictions and firms in improving climate-related disclosures.^[25]
- In March 2022 the FSB set up the Climate Vulnerabilities and Data Group under the Standing Committee on Assessment of Vulnerabilities. The group aims to develop a framework and an analytical toolkit for assessing climate risks to financial stability, globally, by identifying and improving the use of existing metrics and data as well as considering how assessments can be enhanced in future. From June 2023, Sarah Breeden (Executive Director for Financial Stability Strategy and Risk and member of the Financial Policy Committee) took on the role of chair to drive the work forward.
- Through the Organisation for Economic Co-operation and Development, the Bank contributed to high-level principles for climate transition-relevant finance and is contributing to work to develop a framework to use transition plans to track progress against financial sector net-zero commitments.

5. Demonstrating best practice through the Bank's own operations

The Bank holds itself to the same climate-related standards that it expects of the firms it regulates and the financial system it oversees. As such, the Bank is taking steps to ensure its own operations conform to best practice in the measurement, management and mitigation of climate risks. This includes reducing emissions from the Bank's physical activities (such as its

buildings, production of banknotes, and travel) and reporting on climate risks relevant to its financial market operations. The Bank mitigates the climate risks to its financial operations to the extent possible without adversely affecting its core public policy objectives of monetary and financial stability. The Bank has considered how its approach to its own operations, where relevant, maps to the supervisory expectations it has set for PRA-regulated banks and insurers (as set out in Table 2.A).

This year the Bank has developed its first **CTP**, setting out its approach to reducing emissions from physical operations to net zero by 2040. In preparing the CTP the Bank has aligned its work to the TPT framework and guidance issued for consultation in November 2022.

Table 2.A: Mapping of the Bank’s actions to the PRA’s supervisory expectations for managing the financial risks from climate change as set out in SS3/19

Supervisory expectations under SS3/19	Actions the Bank has taken consistent with these expectations
Governance	<p>Established a Bank-wide climate strategy signed off by the executive committees.</p> <p>Assigned SMF Climate to Sarah Breeden, the Bank’s Executive Sponsor for climate change.</p> <p>Established an executive director-level climate steering group as support to the Bank’s wider governance framework.</p>
Risk management	<p>Incorporated climate risks within Bank-wide risk management framework.</p> <p>Key climate risk metrics included in risk monitoring pack presented to the relevant executive committee, the Bank’s Court and ARCo.</p>
Scenario analysis	<p>The Bank concluded its system-wide scenario exercise (the CBES). It is exploring the extent to which the results can inform the Bank’s approach, its future scenario strategy and continue to deepen the range of forward-looking scenario-based analyses that the Bank carries out on its own balance sheet. An example of this is the scenario analysis of the Bank’s sovereign holdings included in this disclosure.</p>
Disclosure	<p>Produced TCFD-aligned climate disclosure, approved for publication by the Bank’s Court.</p>

Source: Bank of England.

3: Risk management, metrics and targets

Summary

- The Bank is itself exposed to climate risks across both its physical operations (eg due to physical risks to its buildings) and its financial operations.
- Climate risks are identified, monitored and managed using the Bank's established risk management framework, within which climate change is identified as a 'Key Risk Type'.

The Bank has a risk management framework that spans all of the Bank's functions. The risk management framework specifies the Bank's risk tolerance for financial and non-financial risks. It is underpinned by an internal classification of risk types (a risk taxonomy), which all areas of the Bank use to categorise their risks.

Within the risk taxonomy, the Bank identifies a small number of 'Key Risk Types', which are overseen by a named 'Risk Custodian'. The Risk Custodian for climate change risk is Sarah Breeden, one of the Bank's Executive Sponsors for climate change and SMF Climate. Risk Custodians, supported by the Bank's second line risk function, are responsible for defining a set of risk metrics and tolerances; monitoring and reporting them and, where appropriate, co-ordinating the timing and implementation of mitigants.

The Bank's climate risk metrics aim to capture the full range of climate risks to which the Bank is exposed. They are reviewed periodically, reflecting the pace of development in the field and frequency of reporting of underlying data. Over the past year, work has been undertaken to update the metrics to reflect the Bank's new Physical Greenhouse Gas Emissions Target (PGGET). The Bank will start reporting on the new metrics in June 2023.

The Bank uses its risk management framework to monitor exposure to climate risks and to assess how those risks could impact the resilience of its financial and physical operations. To help analyse climate risks in both these areas, the Bank focuses on the potential financial and non-financial impacts emanating from two climate risk drivers:

- physical risks relating to both specific weather events and to longer-term shifts in the climate; and
- transition risks arising from the adjustment towards a carbon-neutral economy.

These risks are assessed across the near-term horizon, through regular Risk and Control Self Assessments prepared by each of the Bank's key functions. They are also assessed through the climate risk metrics, and, for risks which are more uncertain or less proximate, through regular analysis of emerging risks.

The Bank's approach to risk management is influenced by three distinct characteristics, which the Bank sees in both transition and physical climate risks, and which mean that addressing climate risks presents unique challenges:

- **The impact is far-reaching in breadth and magnitude:** climate change risks will affect all parts of the economy and society, across all sectors and geographies. The risks will be correlated and their impact nonlinear and irreversible.
- **Many of the risks are foreseeable:** while the exact outcome is uncertain, some combination of transition and physical risks will crystallise.
- **The magnitude of the future impact is dependent on actions today:** this includes actions by governments, central banks and regulators, financial firms, businesses, and households.

While these three characteristics mean that climate risks present unique measurement and management challenges, the Bank recognises that delay in taking action will impair its ability to both measure the risks the Bank is taking in the short term and assess the long-term consequences of those decisions. As such, the Bank is taking a forward-looking approach to climate risk management and is prioritising development of the necessary skills and knowledge to manage risks as they develop.

The process for managing risks related to climate change will continue to develop as the Bank's understanding of underlying risks improves, technical capabilities are enhanced, and methodologies evolve and become more standardised.

The remainder of this section sets out the key climate risks the Bank has identified to its financial and physical operations.

Key climate-related risks in the Bank's financial operations

Summary

- The Bank continues to demonstrate best practice in climate risk reporting on its financial asset holdings, by disclosing analysis of both its sovereign and corporate asset holdings and enhancing its analysis to align with the latest guidance.
- Static, backward-looking measures of the climate risks in the Bank's financial operations have remained broadly stable. For example, **the Weighted Average Carbon Intensity (WACI) of its sovereign bond portfolios remained largely**

unchanged between February 2022 and February 2023, suggesting no material change in transition risks.

- Such measures are helpful in comparing climate risks across different portfolios – and show that **the transition and physical risks associated with the Bank’s holdings are materially lower than those in a G7 reference portfolio**. But to be decision-useful (a key goal of the Task Force on Climate-related Disclosures), climate risk metrics need to be forward-looking, and expressed in terms that can be integrated into the holistic financial risk frameworks that inform day-to-day risk management decisions across the financial system.
- The methodologies for calculating such measures remain relatively new, and hence it will be some time before full risk integration is possible. To give an indication of direction of travel, however, **this report contains forward-looking scenario analysis. This uses projections to estimate potential financial impacts across the Bank’s portfolios in the future. It differs from point in time metrics, which provide proxy measures of financial risks today, but do not project into the future**. Among other things, new experimental metrics suggest:
 - The value of the Bank’s sovereign bond holdings could fall by up to 6.8% in the most adverse climate scenarios. This assumes that the future path of interest rates consistent with such an adverse scenario is immediately reflected in the bond prices. However, the pathway of interest rates across climate scenarios is uncertain and will be determined by the responses of both financial markets and central banks.
 - Carbon budget pathways for sovereign issuers imply that the Bank’s sovereign asset portfolios are aligned with the 2°C Paris goal, but not with the 1.5°C ambition.
 - In some adverse transition risk scenarios, the debt service ratios of households owning poorly insulated homes could increase by 9 percentage points, compared to a less than 1 percentage points for households owning the most efficient properties. These transition risks might impact borrowers’ mortgage affordability, and feed through to increased risks to mortgage collateral that the Bank accepts.
- Following the MPC’s decision to begin exiting quantitative easing in February 2022, holdings in the Corporate Bond Purchase Scheme (CBPS) have now been substantially unwound, through a combination of maturities and sales.
- The total climate-related losses that the Bank could suffer have therefore declined. The framework introduced in November 2021 to ‘green the CBPS’ was only in operation for a short period. **Nevertheless, application of the framework to reinvestment operations undertaken between November 2021 and January 2022 successfully reduced transition risks of the Bank’s corporate bond**

holdings. It is encouraging to see other organisations, including the European Central Bank, subsequently adopted similar frameworks in their own operations.

The Bank engages in a range of market operations for the purposes of achieving its monetary policy and financial stability objectives, and – to a much smaller degree – funding its wider activities. This includes purchasing sovereign and corporate assets and offering secured lending to counterparties. As part of managing the financial risks involved in this secured lending, the Bank manages a wide range of collateral. The full range of the Bank's policy and balance sheet tools are set out in the [Bank of England Market Operations Guide](#).

As in previous years, the largest proportion (97%) of the Bank's financial assets is held in a separate legal vehicle known as the [Bank of England Asset Purchase Facility Fund](#), indemnified by HM Treasury, to implement the MPC's asset purchase programme. Sterling UK Government bonds (gilts) represent 99% of that portfolio. The remaining 1% is currently invested in sterling corporate bonds as part of the CBPS.

Both sovereign asset holdings and CBPS holdings in the Asset Purchase Facility (APF) decreased in 2023, reflecting the MPC's monetary policy decisions. The CBPS is being unwound through a programme of not reinvesting the proceeds from maturing bonds and selling corporate bonds.^[26] APF gilts are also being allowed to mature, and a sales programme is under way.^[27]

As in previous years, the analysis in this climate disclosure covers assets that have a maturity of more than 12 months and excludes the Bank's secured lending operations (see Box A for a discussion of risks around the Bank's collateral). Consistent with the Bank's 2022 disclosure, the climate disclosure related to the Bank's staff pension fund is reported separately.^[28]

Table 3.A: Financial exposures covered in this section (a) (b) (c)

Exposure	£ billions, end-February 2023	Purpose	Composition
Asset Purchase Facility (APF) of which:	637.3	Mandated by the Bank's MPC, as part of its asset purchase programme. Held in a separate legal vehicle and indemnified by HM Treasury.	Gilts (99%) and sterling investment-grade corporate bonds (1%).
– APF sovereign holdings	630.8		
– APF corporate holdings (acquired through the CBPS)	6.5		
Bank's own securities holdings	21.4	For policy implementation, and to fund the Bank's policy functions.	Gilts (75%), other sovereign and supranational bonds.

Source: Bank of England.

(a) For the sake of consistency with previous disclosures, the asset values in Table 3.A are stated at fair value, with the exception of the Bank's own securities holdings, which is stated at fair value plus accrued interest.

(b) The Bank's own securities holdings include both the Bank's Sterling Bond Portfolio and FX bonds.

(c) Figures include mid to bid adjustment.

In its first disclosures, the metrics the Bank considered to assess climate risk were largely backward-looking, point in time metrics such as carbon intensities. However, climate-related financial risk management remains a rapidly developing field, and the Bank's approaches are continuously being refined as data and methodologies develop.

For climate risk metrics to become decision-useful from a financial risk management perspective, they need to be forward-looking and expressed in quantitative terms which can be incorporated into existing financial risk frameworks. In simple terms, this means transitioning from 'proxy' metrics which indicate relative risks (such as carbon intensities), to metrics which help quantify financial losses in different scenarios.

For this reason, the Bank is continuing to deepen the range of forward-looking scenario-based analyses it uses to assess the financial impact of transition and physical risks and moving forward with incorporating these into its risk frameworks (see Figure 3.1). Given that many methodologies are still evolving, the estimates are highly uncertain. But the analysis

can still provide useful insights and inform future work with respect to managing climate-related risks in its financial operations. The data and metrics section provides further detail on the different types of metrics included in the report.

Figure 3.1: Sequencing of climate risk management initiatives across the Bank’s financial operations

	Direct exposures			Exposures via collateral
Timeline	Sovereigns	Corporates	SMF counterparties (eg banks, building societies)	Collateral
Past	Implemented initial sovereign climate risk framework and monitored impacts on internal credit ratings	Measured the aggregate carbon footprint of the corporate exposures	Took initial steps to incorporate a number of climate-related risk questions into credit risk methodologies, and use these for peer reviews	Incorporated climate-related questions into the due diligence questionnaires for loan collateral
	Applied sovereign climate risk framework to the sub-sovereign level	Designed and implemented approach to CBPS greening, including developing corporate credit risk monitoring tools		Expanded climate-related risk information gathering to capture data on energy-efficiency ratings for residential mortgages
Present	Develop more advanced sovereign climate risk metrics to monitor potential financial implications of climate factors	The MPC announced it would unwind the CBPS by a programme of corporate bond sales. Among other factors, climate factors affect ‘reserve spreads’ during the sales process	Explore additional climate risk data sources and credit rating agency approaches in line with emerging best practice	Analysing climate risk information that has been collected
				Developing methodologies to incorporate climate into collateral valuation
Future	Continue to review the sovereign risk framework and further develop it in line with emerging best practice		Continue to develop the credit risk framework	Incorporate climate into collateral valuation and/or eligibility where deemed relevant

Source: Bank of England.

Similar approaches are being developed and adopted for the Bank's exposures to collateral risks. Box A provides an example of how the Bank is considering climate risks associated with residential mortgage collateral.

Box A: Climate risks facing residential mortgage collateral

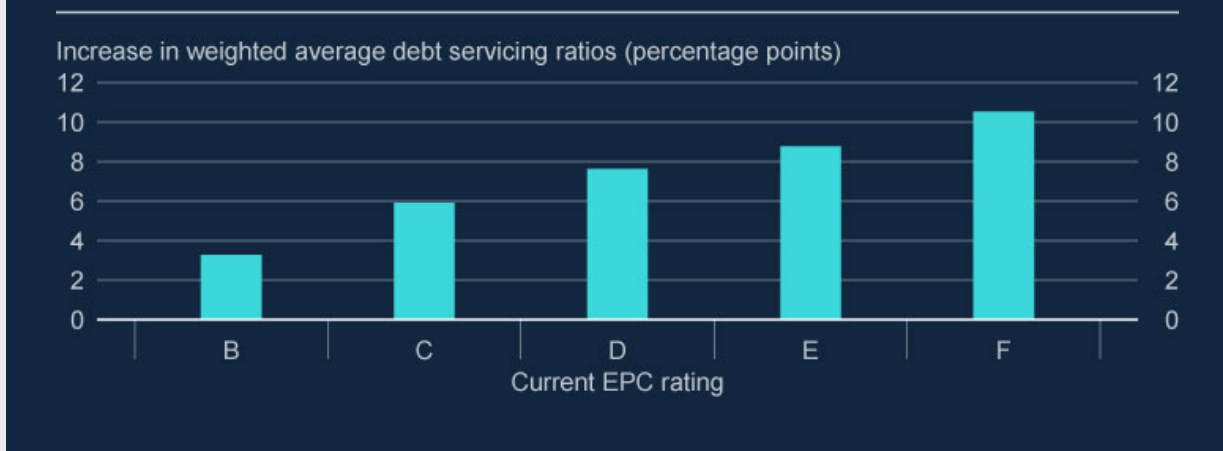
The Bank's own balance sheet is exposed to a range of climate-related financial risks, including through the Sterling Monetary Framework operations. As part of these operations the Bank lends to eligible firms against collateral delivered by firms. The Bank accepts a wide range of collateral. This includes residential mortgages, which represent the majority of collateral repositioned with the Bank. Like other financial assets, residential mortgages may be exposed to climate risks.

As set out in the [results of the Bank's CBES](#), transition risks may impact the value of residential mortgages via two main channels. First, if governments implement policies to reduce emissions, this may cause energy costs to rise, especially for homeowners with less energy-efficient homes. While households may offset some or all of this impact via energy-efficiency improvements, these also carry costs of their own. We anticipate that taken together, higher costs of energy and retrofits may temporarily or permanently increase borrowers' debt servicing ratios. This ratio is the percentage of borrowers' monthly incomes that they use to meet monthly mortgage payments. This change may make it harder for homeowners to meet their monthly mortgage payments.

We are actively monitoring the materiality of these impacts. To do so, we can consider how borrower affordability may be impacted in a scenario where energy prices double relative to prices observed at the end of 2021. This is broadly in line with the energy price shock observed in 2022. For illustrative purposes we assume that households take a range of measures to improve the energy efficiency of their homes to mitigate some of the impact of rising energy costs.

Under this scenario, borrower debt affordability worsens for all borrowers regardless of the Energy Performance Certificate (EPC) rating of their property. This is because energy bills rise for all borrowers, and retrofits only partially offset the resulting pressures. However, this impact is much more pronounced for less energy efficient homes (Chart 3.1) which tend to be owned by households with higher income levels. [29] For example, mortgages secured on EPC F rated properties experienced, on average, a 10 percentage point increase in the debt servicing ratio. This is compared to a 3 percentage point increase in the debt servicing ratio for EPC B rated properties. [30] This suggests that borrower affordability for those with more energy efficient homes is less impacted by rising energy prices.

Chart 3.1: Estimated impact of a doubling in energy prices on borrower affordability across EPC ratings (a)



Source: Bank of England.

(a) EPCs measure a property's energy efficiency. The rating scale spans from EPC A (most energy efficient) to EPC G (least energy efficient). We have excluded EPC A and EPC G from analysis due to small sample sizes.

Some properties may also be exposed to the physical risks of climate change. For example, flood damage can cause significant losses for homeowners. In the UK, the vast majority of mortgage borrowers are insured against flood risk. However, if homeowners were to fail to renew their policies or insurers were no longer willing to provide cover, this could leave homeowners more exposed to flood risk. Even where there is good insurance coverage, an increased actual or perceived risk of flooding could affect property prices through expectations of higher insurance premia and inconvenience.^[31]

The CBES included specific scenarios related to flood risk. The [results](#) from that suggest mortgage losses were likely to be highly geographically concentrated. As set out in last year's disclosure, the Bank actively monitors its exposure to mortgage collateral that may be more exposed to flood risk.

Data and metrics

The analysis in this section is based on the asset holdings reported in the Bank's [Annual Report](#) and Accounts as at end-February 2023.

The metrics draw on both publicly available data and on data and methodologies from external data providers used by the Bank. The Bank continues to monitor developments in climate risk data and methodologies in order to adapt its approach in line with emerging best practice.

Consistent with previous years, for sovereign holdings, emissions data are obtained from the [United Nations Framework Convention on Climate Change](#) (UNFCCC) national GHG inventories and matched to gross domestic product (GDP) data taken from the [World Bank](#). The latest available emissions data relate to 2020 calendar year emissions. Therefore, the climate metrics the Bank uses to assess the Bank's sovereign holdings this year are the first to incorporate emissions data which contains Covid-related impacts. Covid led to reductions in both country-level emissions^[32] and GDP^[33] during 2020. Metrics for previous years have been restated if there have been revisions to historical data from these sources.

For CBPS holdings, emissions data and revenues are obtained from an external data provider (MSCI) and/or manually retrieved from companies' own disclosures. Given reporting lags, the latest available climate data relate to companies' emissions and financials as of annual reporting periods ending between 1 June 2021 and 31 May 2022. Covid led to both reductions in corporates' emissions and revenues.^[34] Due to the range of financial reporting periods for corporates in the CBPS, Covid impacts are visible across three years of reported data – 2022 (as highlighted in last year's disclosure), and to a lesser extent, also 2023 and 2021.

To assess risk exposure in the Bank's sovereign and CBPS asset holdings, the Bank uses:

- point in time metrics, as proxies for exposure to transition and physical risks; and
- forward-looking measures and scenario analysis metrics, which consider potential financial impacts of climate risks on the Bank's portfolios across a range of plausible transition and physical risk scenarios.

Point in time metrics presented in this disclosure include: WACIs, financed emissions and natural resource rents. Portfolios associated with higher WACIs, financed emissions, or natural resource rents are typically more exposed to transition risks.

These metrics are limited by being snapshots in time which do not consider the likelihood, or effectiveness of, future decarbonisation plans that sovereign or corporate issuers may have in place to mitigate transition risks. Some point in time metrics, for example financed emissions, are also limited by not being comparable across portfolios as they do not control for portfolio size.

In addition, they are only a proxy for a portfolio's level of exposure to transition risks. They do not provide quantitative, forward-looking analysis which can be integrated into day-to-day risk management frameworks. Therefore, their usefulness to inform financial risk decisions is limited.

Forward-looking metrics include those which measure whether issuers have credible decarbonisation targets, as well as the 'Implied Temperature Rise' (ITR) of a portfolio. The ITR compares decarbonisation plans of issuers to what is necessary to achieve 1.5°C alignment. It expresses the results as the amount of warming we would expect to see if the entire world economy were to overshoot the net-zero trajectory by the same degree as the relevant portfolio.

Although forward-looking metrics bridge some of the gap to decision usefulness, they are still limited by not being expressed in terms which can be integrated into financial risk frameworks.

In order to develop metrics which can quantify financial losses in different scenarios and be decision-useful, the Bank is continuing to develop its scenario analysis. Scenario analysis uses plausible trajectories for climate policy to assess the potential impact of transition and physical risks on asset values. In theory, scenario analysis gives the Bank the most complete measure of climate-related financial risks to its balance sheet. However, scenario analysis metrics:

- are sensitive to underlying scenario assumptions, including about the behaviour of governments, corporates, and households; and
- do not typically provide an indication of the probability of different scenarios occurring.

There is no single metric which, taken in isolation, can provide a complete picture of the climate risks the Bank is exposed to through its financial operations. Throughout this section, we have therefore detailed the limitations of the individual metrics used and summarised what metrics imply when they are considered in aggregate.

The rest of this section is arranged in two parts: the first covers the Bank's sovereign asset holdings, and the second covers the Bank's corporate bond holdings. For each, we report measures of: the current carbon footprint of the holdings; forward-looking metrics that capture expected changes; and metrics for assessing potential financial impacts of transition risk and physical risk across different scenarios.

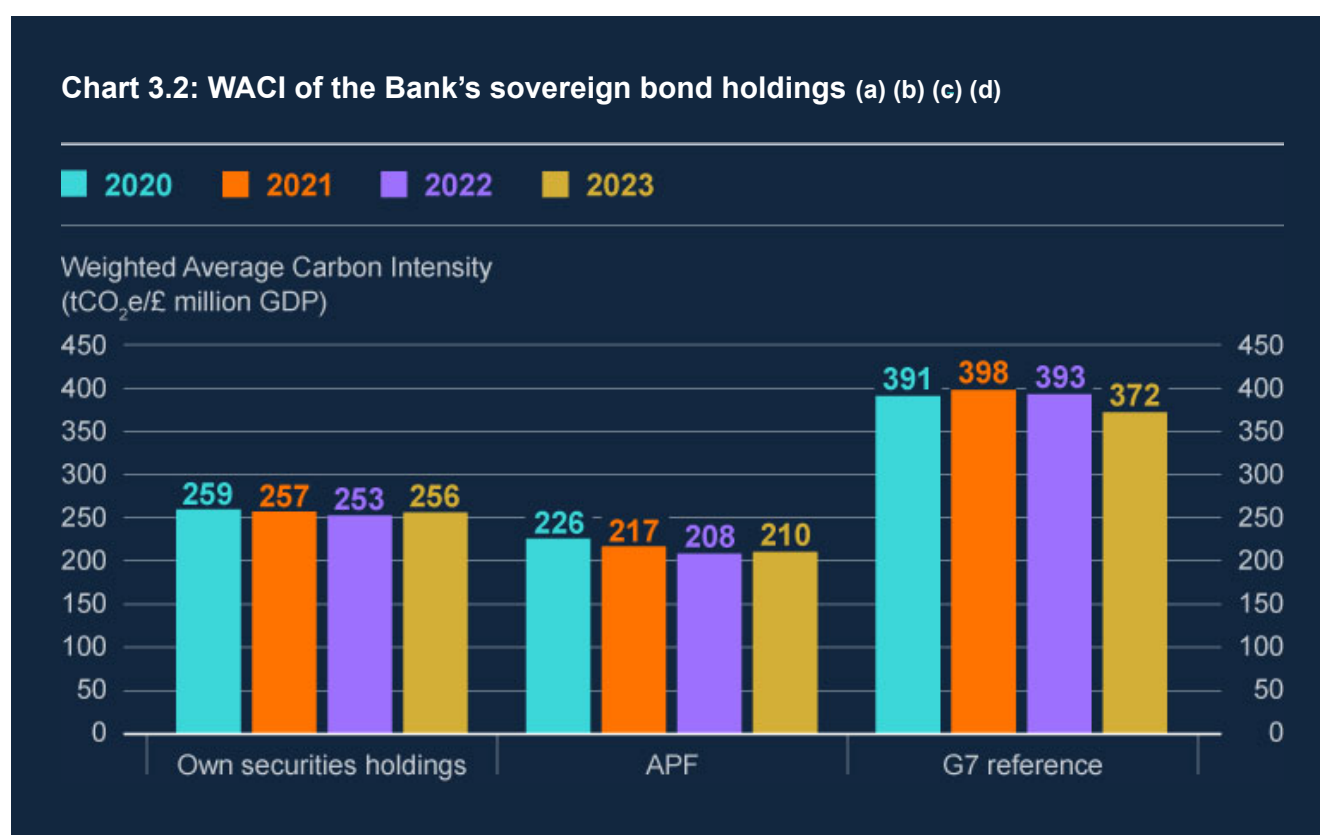
Sovereign asset holdings

Point in time metrics including carbon footprint

The TCFD's recommended metric for assessing the carbon footprint of an asset portfolio is WACI. This portfolio level intensity metric is calculated by weighting the carbon intensity of each asset (GHG emissions measured relative to GDP for sovereigns), based on their proportion of the portfolio.

The data used here measure emissions on a 'production basis': ie emissions from all goods and services produced within a country's territorial boundary and consumed anywhere in the world.[35]

The WACI of the sovereign assets held by the APF remained broadly comparable year on year, from 208 tonnes of CO₂ equivalents per £mn GDP (tCO₂e/£mn GDP) in 2022, to 210 in 2023 (Chart 3.2). Given the monetary policy purpose of the APF, these holdings are comprised entirely of gilts, and so the WACI reflects the carbon intensity of the UK as a whole. The marginal 2022–23 year-on-year increase in WACI of the APF is driven by Covid effects: while UK GHG emissions declined sharply during 2020 (the latest year for which we have data), UK GDP fell by a marginally larger proportion.



Sources: Bloomberg Finance L.P. data for market value of debt outstanding for G7 countries, UNFCCC GHG emissions data (2018, 2019 and 2020), World Bank GDP US\$ PPP (2017 constant prices, for 2018, 2019 and 2020) and Bank calculations.

(a) Due to the lag in reporting of national carbon emissions, the emissions data for the 2020, 2021, 2022 and 2023 portfolios are from 2017, 2018, 2019 and 2020 respectively.

(b) The G7 reference portfolio is calculated by weighting G7 countries according to the market value of debt outstanding at end-February 2023. Market value of debt data are from Bloomberg Finance L.P..

(c) For reference, the reported 2021 and 2022 WACI metrics in last year's climate disclosure were 218 and 208 tCO₂e/£mn GDP (APF Sovereign) and 257 and 251 tCO₂e/£mn GDP (Bank's own securities holdings). These figures have been restated as the external source data used to calculate the metrics has been updated.

(d) APF sovereign holdings at end-February 2023 were £630.8 billion, while the Bank's own securities holdings were £21.4 billion (see Table 3.A).

The **WACI of the Bank's own securities holdings continues to be somewhat higher than that of the APF**, reflecting the fact that, in order to meet the Bank's policy objectives, just under 25% of these assets are invested in the debt of non-UK sovereigns. The WACI of the Bank's own securities holdings has also remained broadly comparable year on year, at 256 compared with 253 a year earlier. This is driven by an increase in the weight of sovereign and supranational bonds, which have a higher carbon intensity than the UK. This impact is partially offset by lagged Covid effects, with the GDP of issuers outside the UK falling less sharply than emissions during 2020. [36]

The WACI of both portfolios remains **materially lower than that of a comparable G7 reference portfolio**, which fell from 393 to 372. This reflects the fact that the G7 reference portfolio contains a number of sovereigns with much more emission-intensive economies. The year-on-year reduction in the reference portfolio is explained by the Covid effects explained above.

WACI estimates do not fully account for countries' exports of fossil fuels. Reliance on such exports can be a significant source of transition risk even if the carbon intensity of countries' own production is limited. So-called 'natural resource rents' (the proportion of GDP accounted for by activities relating to the extraction and production of natural resources, including fossil fuels and minerals) provide one proxy for countries' reliance on fossil fuel exports. Based on World Bank data,[37] total natural resource rents for both the APF holdings and the Bank's own securities holdings **fell from 0.6% to 0.4%** of GDP to 2023, measured on a weighted average basis. Coal-based natural resource rents (the proportion of GDP accounted for by activities relating to the extraction of coal) **remain immaterial for both the Bank's own securities portfolio and the APF.**

These point in time metrics indicate that:

- the WACI of the Bank's sovereign bond portfolios remained largely unchanged between February 2022 and February 2023, suggesting no material change in transition risks;
- the WACI associated with the Bank's holdings is materially lower than that of a G7 reference portfolio, suggesting that the Bank is exposed to less transition risk through its sovereign holdings than international counterparts; and
- the sovereigns that the Bank is exposed to are not materially reliant on natural resource rents, which can be a source of transition risks.

Forward-looking metrics

In order to limit climate change, countries need to undertake significant changes to reduce GHG emissions. To the extent that such reductions are already reflected in countries' national goals and/or policies, the risks associated with such adjustments may be reduced.

In last year's disclosure, the Bank included the alignment of emission reduction targets for sovereign issuers in the Bank's portfolios with a 'below 1.5°C' warming scenario as a transition risk metric. Building on this approach, this year, the Bank is including an ITR metric for its sovereign asset portfolios.

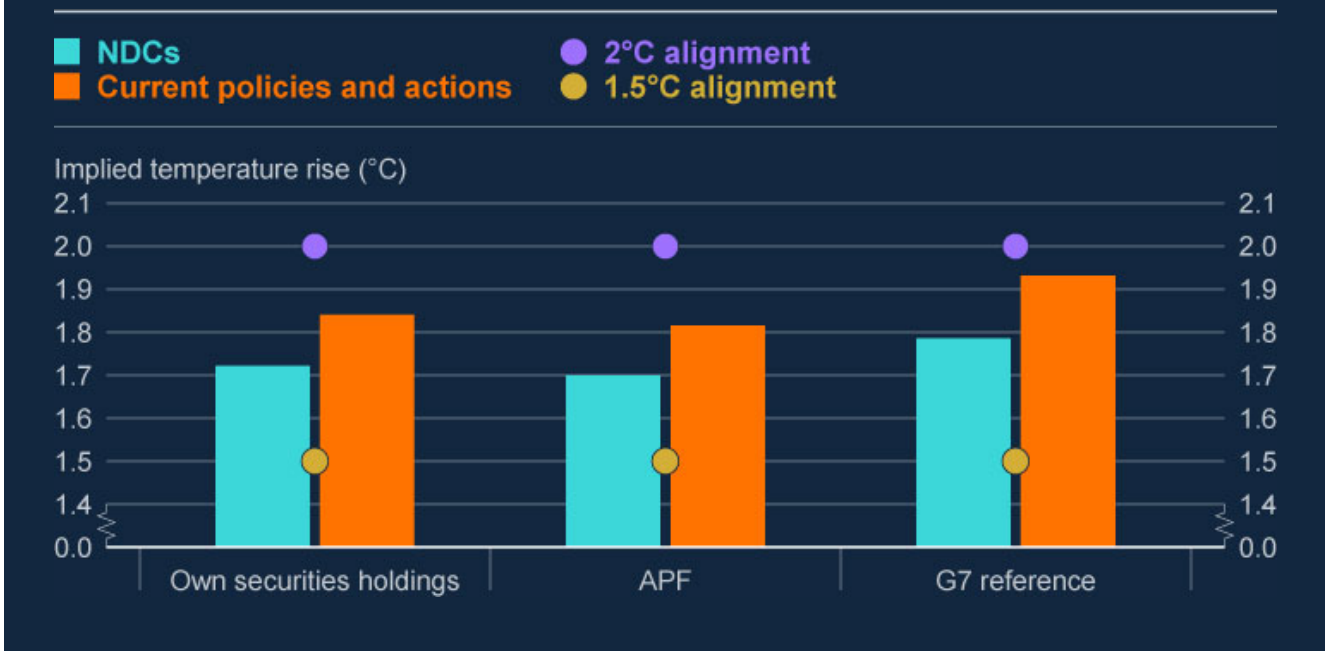
The ITR methodology involves calculating carbon budget overshoots – which are the difference between a sovereigns' projected emissions and an emissions 'budget' that is compatible with a given increase in global temperatures.^[38] Overshoots are aggregated across all of the issuers the Bank is exposed to, and translated into an ITR, in degrees Celsius. The ITR metric gives an estimate of the consequences for global average temperature rise, if the entire world were to overshoot their carbon budgets by the same proportion as the Bank's portfolio.

As it is expressed in degrees Celsius, the ITR is an easy-to-understand metric, which provides an indication of the level of transition risk (ie higher the ITR implies greater transition risk). It can therefore be useful for institutions to inform management of financial assets. Despite this simplicity, ITR metrics remain sensitive to underlying assumptions (such as how individual countries are assigned a carbon budget and how future emissions are projected).

Moreover, they do not by themselves provide a comprehensive basis for assessing a portfolio's exposure to transition risks. For example, the ITR does not account for the financial impact of adopting more ambitious emissions reductions targets. Therefore, when assessing the forward-looking performance of the sovereign asset portfolios, the Bank supplements them with additional measures.

We project countries' emissions pathways based on two approaches. First, based on the Nationally Determined Contributions (NDCs) that countries have committed to under the Paris Agreement. Second, based on the expected impact of sovereigns' current policies and actions. **The ITR of both the APF and the Bank's own securities holdings is 1.7°C under the NDCs approach.** Under the 'current policies and actions' approach, ITR is slightly higher at **1.8°C for both the APF and the Bank's own security holdings.**

Chart 3.3: Implied temperature rise of sovereign asset portfolios



Sources: Bloomberg Finance L.P. data for market value of debt outstanding for G7 countries, [Climate Action Tracker](#) for sovereign issuers NDCs and current policies and actions emissions pathways. [NGFS scenario explorer](#) for projected country emissions pathways in different scenarios, and Bank calculations.

While the ITR of the Bank's own securities holdings and the APF is above 1.5°C, it is significantly below that of a G7 reference portfolio.

Scenario analysis

For the first time, the Bank is including in this disclosure scenario analysis that aims to assess potential financial losses from sovereign asset holdings in a range of climate transition scenarios.

This analysis is based on commonly used [NGFS scenarios](#), which include interest rate projections out to 2050. These interest rate projections are driven by NGFS assumptions about monetary policy responses to the climate transition, as well as changes in term premia that reflect heightened risk aversion.

The analysis presented here takes those NGFS interest rate projections and assumes that the market instantaneously reprices assets today in a way that reflects future interest rates in a given climate scenario. Therefore, despite the long-term outlooks associated with these scenarios, financial losses associated with the various scenarios are assumed to crystallise

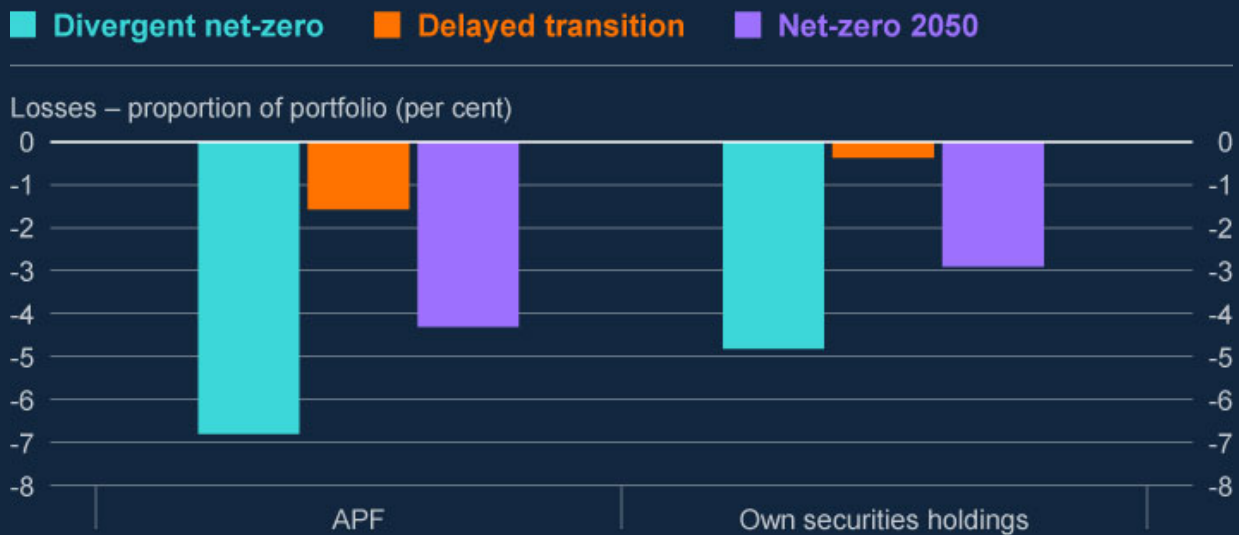
in the short term. Interest rate changes are the only variable which impact modelling results. No assessments of sovereigns' probabilities of default due to physical or transition risk are included.

In all climate scenarios we consider, interest rate changes reduce the value of sovereign asset holdings relative to their current market value. The **APF is exposed to greater losses than the Bank's own securities holdings** (Chart 3.4). This is because the average maturity of bonds in the APF is longer than those in the Bank's own securities holdings, and the APF is hence more sensitive to interest rate risks, particularly in the later years of scenarios.

Divergent net-zero is the scenario with the greatest losses (-6.8% for the APF and -4.8% for own securities holdings). This is because this scenario features a sharp adjustment in short-term interest rates in the near term, which affects all bonds in the portfolio. Conversely, 'Delayed transition' is the scenario with the smallest losses (-1.6% for APF and -0.4% for own securities holdings). This is because short-term interest rates only adjust late in the scenario, which means that only long maturity bonds are affected.

Losses associated with interest rate risk on the Bank's bond portfolio should not be mistaken for the macroeconomic cost of different scenarios. From a macroeconomic perspective, the impacts of different climate scenarios on economic variables such as real GDP are likely to be much more relevant than changes in interest rates. Because of this, the Bank's CBES included a wide range of economic variables via which climate scenarios could affect the macroeconomy. This more comprehensive analysis demonstrated that overall losses in a delayed transition were likely to be much more material than in an orderly net-zero scenario.

Chart 3.4: Potential impact of climate-related increases in interest rates on the value of the Bank's sovereign bond portfolios (a) (b) (c) (d)



Sources: [NGFS Phase 3 Scenario Explorer](#)  for interest rate projections, Bank calculations and modelling.

(a) Losses given as a proportion of total portfolio size at end-February 2023.

(b) Scenarios used in this analysis are NGFS Version 3 scenarios. The scenarios included align with the scenarios used in Chart 3.9 for corporate VaR (where Orderly 1.5°C is Net-zero 2050, Divergent Net-Zero is Disorderly 1.5°C and Delayed Transition is Disorderly 2°C).

(c) Analysis is undertaken based on the composition of the Bank's sovereign asset holdings today, and assumes a sudden, imminent change in interest rate assumptions that reflects a given climate scenario.

(d) APF sovereign holdings at end-February 2023 were £630.8 billion, while the Bank's own securities holdings were £21.4 billion (see Table 3.A).

This scenario analysis indicates that the value of the Bank's sovereign bond holdings could fall by up to 6.8% in the most adverse climate scenarios. This assumes that the future path of interest rates consistent with such an adverse scenario is immediately reflected in the bond prices. However, the pathway of interest rates across climate scenarios is uncertain and will be determined by the responses of both financial markets and central banks.

Physical risk

The forward-looking estimates of physical risk exposure in the Bank's sovereign holdings follow the same methodology used in last year's disclosure. The physical risk scores that we use estimate potential future physical risks between 2030 and 2040 in a 'no additional policy action' scenario, which assumes governments do not introduce policies to address climate

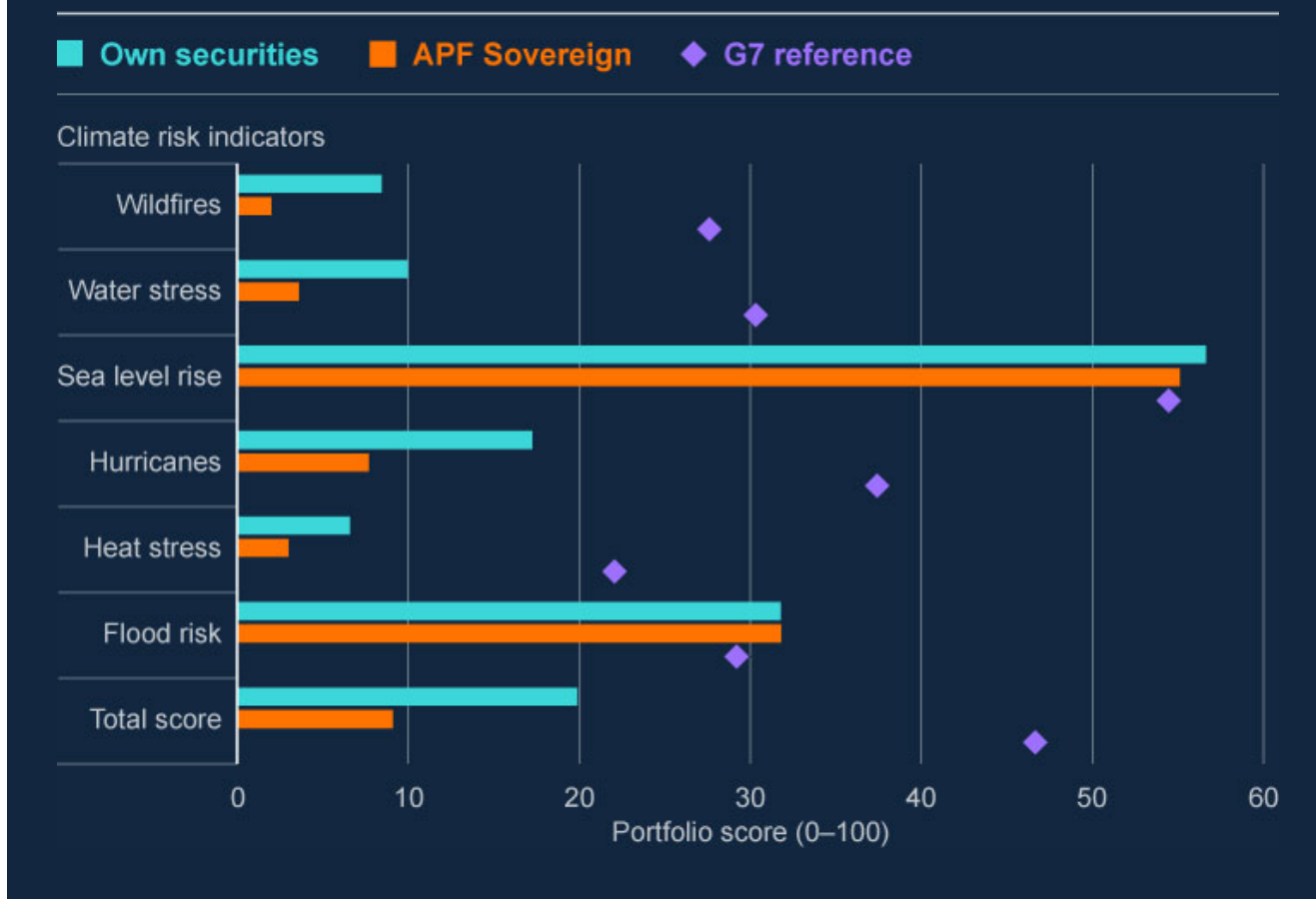
change beyond those already announced. This 'no additional policy action' scenario is the scenario associated with the biggest physical risks and allows us to focus on material downside risks.

The scores displayed in Chart 3.5 represent a percentile ranking – eg a score of 25 means that 25% of the other countries assessed by the data provider face lower risks for a given weather event.

Using this methodology, **the APF's sovereign asset holdings exposure to physical risk remained low relative to other countries (9th percentile)**, with no change year on year. This is considerably lower than that of a comparable G7 portfolio (47th percentile). The difference to the G7 portfolio is driven by lower UK exposure to extreme weather events such as heat stress, hurricanes, water stress and wildfires. Within the APF's overall low score, the risk categories to which the APF is most exposed are sea level rise (55th percentile) and flood risk (32nd percentile).

The physical risk exposure of the Bank's own securities holdings also remained low (20th percentile). Given that the Bank's own securities holdings contain some limited holdings of non-UK sovereigns, their exposure to physical risks is higher than for the APF, but it is still lower than for the G7 reference portfolio. The slight increase in risk relative to last year (from the 16th to the 20th percentile) is driven by an increase in the weight of holdings of countries which are more exposed to physical risks than the UK.

Chart 3.5: Physical risks facing the Bank's sovereign bond holdings (a) (b) (c)



Sources: Bloomberg Finance L.P., Moody's Analytics, World Bank and Bank calculations.

(a) The G7 reference portfolio is calculated by weighting G7 countries according to the market value of debt outstanding at year end.

(b) Market value of the debt data are from Bloomberg Finance L.P..

(c) Scores of supranational holdings are weighted using GDP data from the World Bank.

While these data can help us compare risks across sovereign issuers, they do not provide any indication of the absolute size of risks – for example the impact on sovereigns' probability of default. Assessing the absolute impact of physical risks on sovereigns and the value of their bonds is an area of ongoing research.

Corporate Bond Purchase Scheme (CBPS)

The CBPS consists of a broad cross-section of investment-grade sterling corporate bonds issued by companies judged to make a material contribution to UK economic activity.

In November 2021, the Bank published a comprehensive framework for greening its CBPS portfolio. A programme of reinvestment operations^[39] based on this framework was completed between November 2021 and January 2022.

Subsequently, the MPC announced in February 2022 that it would reduce the stock of holdings of sterling corporate bonds through a combination of not reinvesting the proceeds from maturing bonds and active bond sales, with the sales program having concluded in June 2022. The total climate-related losses that the Bank could suffer in the context of the CBPS have therefore declined materially.

This year, the Bank continues to include analysis for the CBPS despite the wind-down, as assets remained on the balance sheet of the APF as of end-February 2023.

We are also including new analysis which considers the impact of the framework for greening the CBPS. It is encouraging to see other organisations, including the European Central Bank, subsequently adopted similar frameworks in their own operations.

Point in time metrics including carbon footprint

A portfolio-level carbon intensity metric is calculated by weighting the carbon intensity of each issuer (Scope 1 and 2 GHG emissions in tCO₂e divided by revenues in £ million),^[40] based on their proportion of the portfolio. Given that disclosure of Scope 3 emissions is still limited, and numbers are not necessarily comparable across firms, we do not include Scope 3 emissions in the WACI measure.

The WACI of the CBPS remained broadly similar in the year to February 2023 (Chart 3.6). The CBPS WACI as of February 2023 was 229 tonnes of CO₂ equivalents per £mn of revenue (tCO₂e/£mn), up from 226 tCO₂e/£mn in 2022. Box B provides a more detailed analysis of the various factors that have contributed to this.^[41]

Chart 3.6: WACI of the CBPS (a) (b)

Portfolio Weighted Average Carbon Intensity
(tCO₂e/£ million revenue)



Sources: Certain information 2023 © MSCI ESG Research LLC, reproduced by permission, companies' annual filings and Bank calculations.

(a) For MSCI data used throughout this report: Although the Bank of England's information providers, including without limitations, MSCI ESG Research LLC and its affiliates (the 'ESG Parties'), obtain information (the 'Information') from sources they consider reliable, none of the ESG Parties warrants or guarantees the originality, accuracy and/or completeness, of any data herein and expressly disclaim all express or implied warranties, including those of merchantability and fitness for a particular purpose. The Information may only be used for your internal use, may not be reproduced or disseminated in any form and may not be used as a basis for, or a component of, any financial instruments or products or indices. Further, none of the Information can in and of itself be used to determine which securities to buy or sell or when to buy or sell them. None of the Information is intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such. None of the ESG Parties shall have any liability for any errors or omissions in connection with any data herein, or any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

(b) The historical WACI for 2021 and 2022 has been restated from 253 and 233 tCO₂e/£mn respectively to account for improvements in data quality (eg moving from modelled emissions estimates to companies' disclosed emissions, and due to company restatements).

Taken in aggregate, these carbon footprint metrics indicate that WACI of the CBPS portfolio remained broadly unchanged year on year. Despite this, the size of the portfolio has fallen materially since last year, so transition risk and therefore exposure to climate-related losses has declined year on year.

Box B: Impact of 'green' reinvestments and unwind policies on CBPS carbon footprint

Greening the CBPS

In 2021, in line with HM Treasury's update to the MPC remit, the Bank announced its intention to align its CBPS portfolio with the UK's overall commitment to achieve net-zero GHG emissions by 2050. It did so in a way that allowed the Bank to support the UK Government's economic policy, without undermining the CBPS's primary monetary policy purpose.

In November 2021, the Bank published its approach to greening the CBPS and the four tools we would use ([Greening our Corporate Bond Purchase Scheme \(CBPS\)](#)):

- **Targets:** 25% reduction in the CBPS's WACI by 2025 and net-zero emissions by 2050.
- **Eligibility:** climate-related criteria for eligibility.
- **Tilting:** within each sector, tilt purchases toward stronger climate performers and away from weaker ones.
- **Escalation:** escalate requirements over time.

For tilting purposes, we defined stronger climate performers as those with lower carbon intensities, larger historical reductions in absolute emissions, climate-related financial disclosures, and emissions reduction targets verified by a third party.

This approach reflected the fact that current carbon intensities are only one indicator of whether companies are taking action to achieve net zero. A more comprehensive scorecard can provide a more accurate picture of the contribution that companies are making to net zero, and the transition risks that they may be exposed to.

In November 2021, the Bank began to implement its approach to greening the CBPS and applied these criteria to upcoming reinvestments rounds. At its February 2022 meeting, the MPC voted for the Bank to begin to reduce the stock of sterling non-financial investment-grade corporate bond purchases, by ceasing to reinvest maturing assets and via a programme of corporate bond sales.

Reinvestments

The reinvestment 'tilting' approach to green the CBPS therefore was only operational for the reinvestment programme that took place between November 2021 and January 2022. Approximately £600 million of reinvestments occurred during this

period – equivalent to 3% of the total size of the CBPS. Reinvestments took place only in the water, property and finance, electricity and energy sectors, in order to ‘top-up’ sector weights back to their target proportions.

The effect of the Bank’s reinvestments was to reduce WACI by around 3 tCO₂e/£mn compared to a counterfactual in which the Bank instead topped-up the sector weights by reinvesting in companies with carbon intensities at the sector average. This helped reduce the CBPS’s exposure to transition risk.

Unwind

Between February 2022 and February 2023, the size of the CBPS portfolio reduced materially from £17.6 billion to £6.5 billion. This was achieved by a combination of not reinvesting the proceeds from maturing bonds and active sales. The reduction in the size of the CBPS has materially reduced the climate-related financial risks associated with the CBPS.

As part of the transaction process for CBPS sales, the Bank set a reserve spread which, among a range of other factors (limiting market disruption, managing risks to public money, concentration, liquidity etc) considered the performance along climate metrics relative to their sector peers.

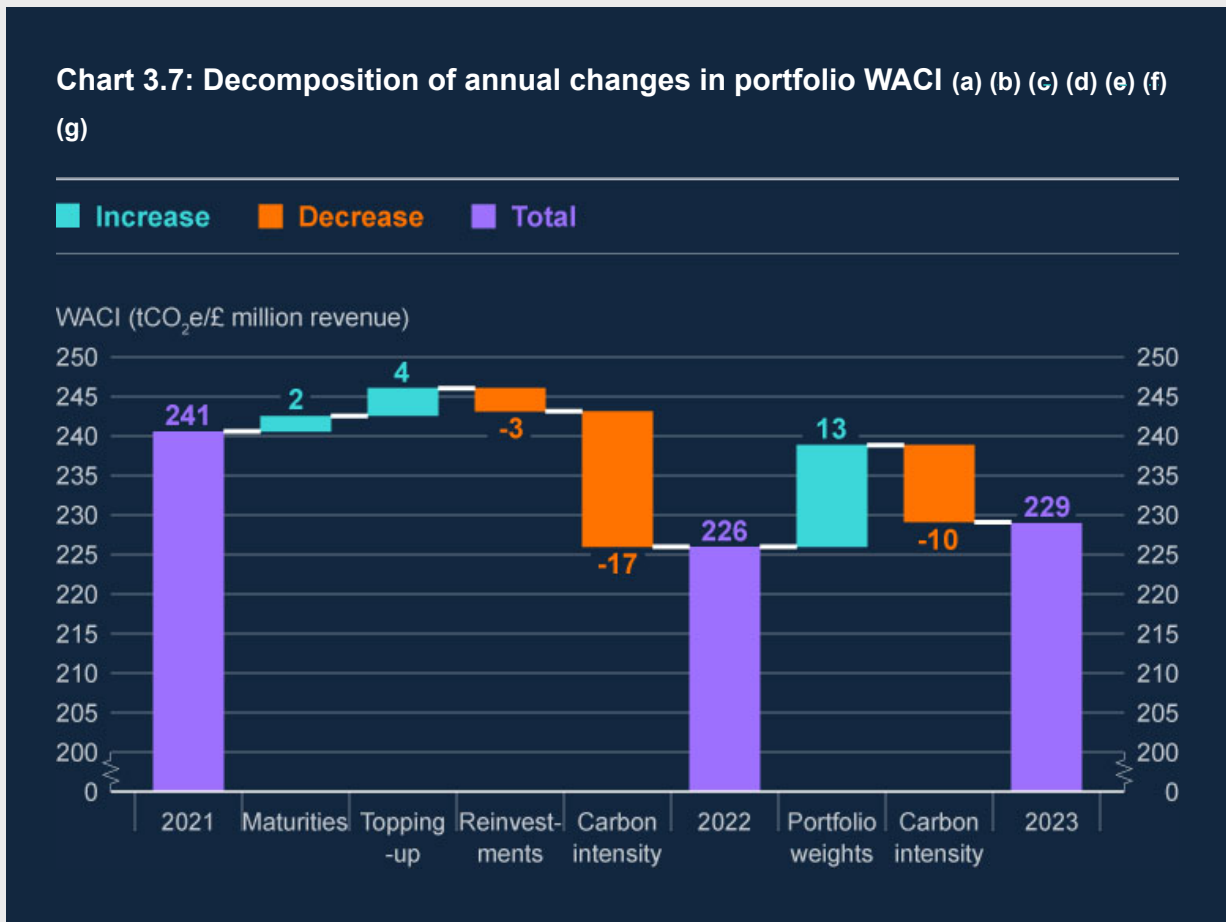
Despite this, changes in the weights of issuers in the CBPS increased the WACI by 13 tCO₂e/£mn between February 2022 and February 2023. This reflects the order of the unwind and the fact that by February 2023, emissions-intensive sectors constituted a larger share of the remaining holdings.

Overall impact of greening and unwind on portfolio WACI

The overall decrease in portfolio WACI between 2021 and 2023 was driven by a combination of changes in portfolio weights (see above), and changes in companies’ carbon intensity (Chart 3.7).

- Reductions in companies’ carbon intensity (ie companies decreasing the emissions they produce per unit of revenue) causes the greatest impact on WACI – leading to reductions of 17 and 10 points between 2021 and 2022, and between 2022 and 2023 respectively.
- Between 2021 and 2022, bonds maturing increased the portfolio WACI by 2 tCO₂e/£mn. This reflects the fact that bonds maturing during this period had unrepresentatively low carbon intensities.
- Between 2021 and 2022, moving sector weights back to their original target increased the WACI by 4 tCO₂e/£mn, while the tilting within sectors reduced WACI by 3 tCO₂e/£mn.

- Between 2022 and 2023, the combination of bonds maturing and sales increased the WACI by 13 tCO₂e/£mn.



Sources: Certain information 2023 © MSCI ESG Research LLC, reproduced by permission, companies’ annual filings and Bank calculations.

- (a) Impact of carbon intensity/weights is calculated by creating a counterfactual portfolio where portfolio weights/carbon intensities remain constant year on year and comparing the resulting difference in portfolio WACI.
- (b) Impact of reinvestments/maturities is calculated by creating a counterfactual portfolio where reinvestments/maturities did not occur and comparing the resulting difference in portfolio WACI.
- (c) ‘Maturities’ shows the impact of bonds which matured between 2022 and 2023.
- (d) ‘Topping-up’ shows the impact on carbon intensity in a counterfactual where the Bank had undertaken reinvestments to ‘top-up’ the size of the CBPS following the maturity of bonds in the portfolio. The counterfactual assumes that issuers the Bank reinvested in had the same carbon intensity as the average for their sector.
- (e) ‘Reinvestments’ shows the impact of the actual reinvestments the Bank undertook as part of greening the CBPS between November 2021 and February 2022, relative to the counterfactual described in (d).
- (f) ‘Carbon intensity’ shows the impact of reductions in carbon intensities of companies in the portfolio.
- (g) ‘Portfolio weights’ shows the combined impact of bond sales as part unwind of the scheme, as well as bonds maturing between 2022 and 2023.

Forward-looking metrics

The ITR methodology (introduced in the Sovereigns section above) can also be used to give a sense of whether corporates' existing emissions and decarbonisation plans are aligned with a given temperature target. This metric incorporates all emissions scopes and, importantly, assumes companies meet their disclosed emissions reductions targets.

Using the MSCI ITR methodology, the ITR of the CBPS for 2023 was 2.2°C. The portfolio ITR has not changed materially since last year. This analysis is based on data covering 73% of the CBPS portfolio.^[42] The difference with the 2.4°C figure reported last year primarily reflects iterative updates made to the methodology, with only a small impact from changing portfolio weights or changes in reduction plans.

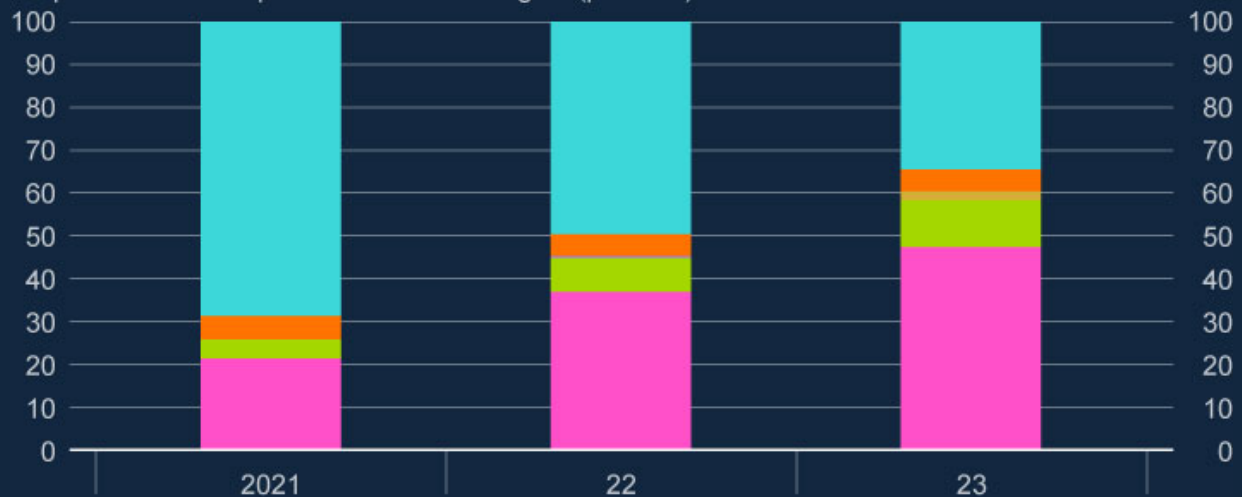
While the ITR provides a forward-looking and intuitive proxy for transition risks, it is sensitive to underlying assumptions (such as how individual corporates are assigned a carbon budget and how future emissions are projected) and the inclusion of Scope 3 emissions in the corporate ITR methodology contributes to the uncertainty of the metric. They therefore do not, by themselves, provide a robust basis for assessing a portfolio's exposure to transition risks. Therefore, when assessing the forward-looking performance of the CBPS portfolio, the Bank supplements them with additional measures.

The assessments by the [Science Based Targets initiative \(SBTi\)](#) [↗] are a useful alternative means of assessing the CBPS portfolio's alignment with transition pathways and exposure to transition risk. SBTi sets out a methodology to develop company-level decarbonisation targets in line with Paris-aligned macro trajectories. SBTi verify that targets set by companies are compatible with these pathways and provide an assessment of firms' commitment to improve their forward-looking climate performance. SBTi assesses firms' targets against three categories: 1.5°C aligned, 'well-below' 2°C aligned and 2°C aligned.^[43]

Chart 3.8: Proportion of CBPS portfolio with verified science-based targets (a)



Proportion of CBPS portfolio with SBTi targets (per cent)



Sources: SBTi and Bank calculations.

(a) The chart shows the proportion of the portfolio with emissions reductions targets that have been calibrated, set and verified by SBTi and to which pathway they are aligned.

The proportion of CBPS issuers with a verified target has increased in each of the past two years to 66% in 2023 (Chart 3.8). Within that, the share of companies aligned with 1.5°C increased from 21% of the portfolio in 2021 to 47% in 2023. Despite the high proportion of firms with verified targets, the extent to which these firms have put actions in place to achieve these is unknown.

Taken in aggregate, these forward-looking metrics indicate:

- On aggregate, the CBPS is broadly aligned with a 2°C pathway, but not with a 1.5°C pathway.
- Companies in the CBPS portfolio are increasingly setting decarbonisation targets verified by the SBTi.

Scenario analysis

In order to measure potential financial losses and move towards integrating climate risks into holistic risk management frameworks, we estimate the share of value that companies in the portfolio might lose. This analysis is undertaken for different climate scenarios and assumes

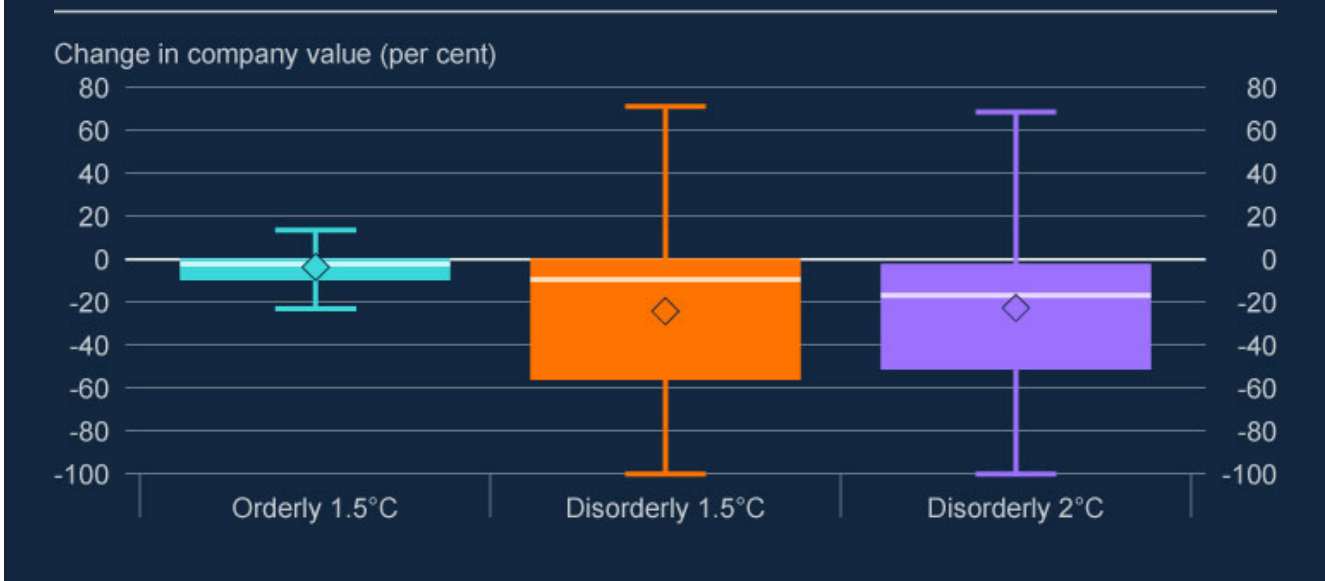
that transition costs and opportunities out to 2100 were fully priced in by investors today.[44] To arrive at this, the future costs and benefits faced by a corporate under a given scenario are discounted and compared to the firm's current valuation as measured by their enterprise value.

This analysis relies on data and models provided by one of the Bank's data providers, MSCI, and uses a subset of scenarios published by the NGFS.[45] The orderly 1.5°C scenario is associated with timely action to limit global warming to 1.5°C; whereas the disorderly scenarios are associated with a delayed, and hence more disruptive, transition to 1.5°C or 2°C. While the estimates are subject to significant uncertainty and are driven by a number of important modelling assumptions, they can still provide useful insights.

In the orderly 1.5°C scenario, there is minimal impact on average company valuations. More material impacts are observed for both disorderly 1.5°C and disorderly 2°C.

However, there is significant heterogeneity across firms. For example, in the disorderly scenarios the impact on the mean firm is estimated to be limited, but a number of firms lose all value.

These results are similar to those reported in the 2022 disclosure. Small variations year on year are driven by minor changes in portfolio weights.

Chart 3.9: Scenario analysis impact on corporate valuations (a) (b) (c) (d) (e)

Sources: Certain information ©2023 MSCI ESG Research LLC, reproduced by permission, and Bank calculations.

(a) Company value refers to enterprise value, which is the combined market value of a company's debt and equity.

(b) These estimates factor in potential financial risks associated with transition risk only. They do not incorporate the potential impacts of physical risk on company values.

(c) These boxplot charts show the minimum and maximum valuation impacts on portfolio companies (horizontal line), the interquartile range (box), the median impacts (centre line) and the mean impact (diamond).

(d) Outliers (values beyond 1.5 times the interquartile range) are excluded.

(e) This analysis is undertaken for 60% of the CBPS portfolio only due to data availability.

Taken in aggregate, these scenario analysis metrics indicate:

- The remaining CBPS holdings continue to be exposed to transition risks, particularly in disorderly transition scenarios and which has not materially reduced year on year.
- There is significant heterogeneity across firms, with a number of firms losing all value in a disorderly scenario.

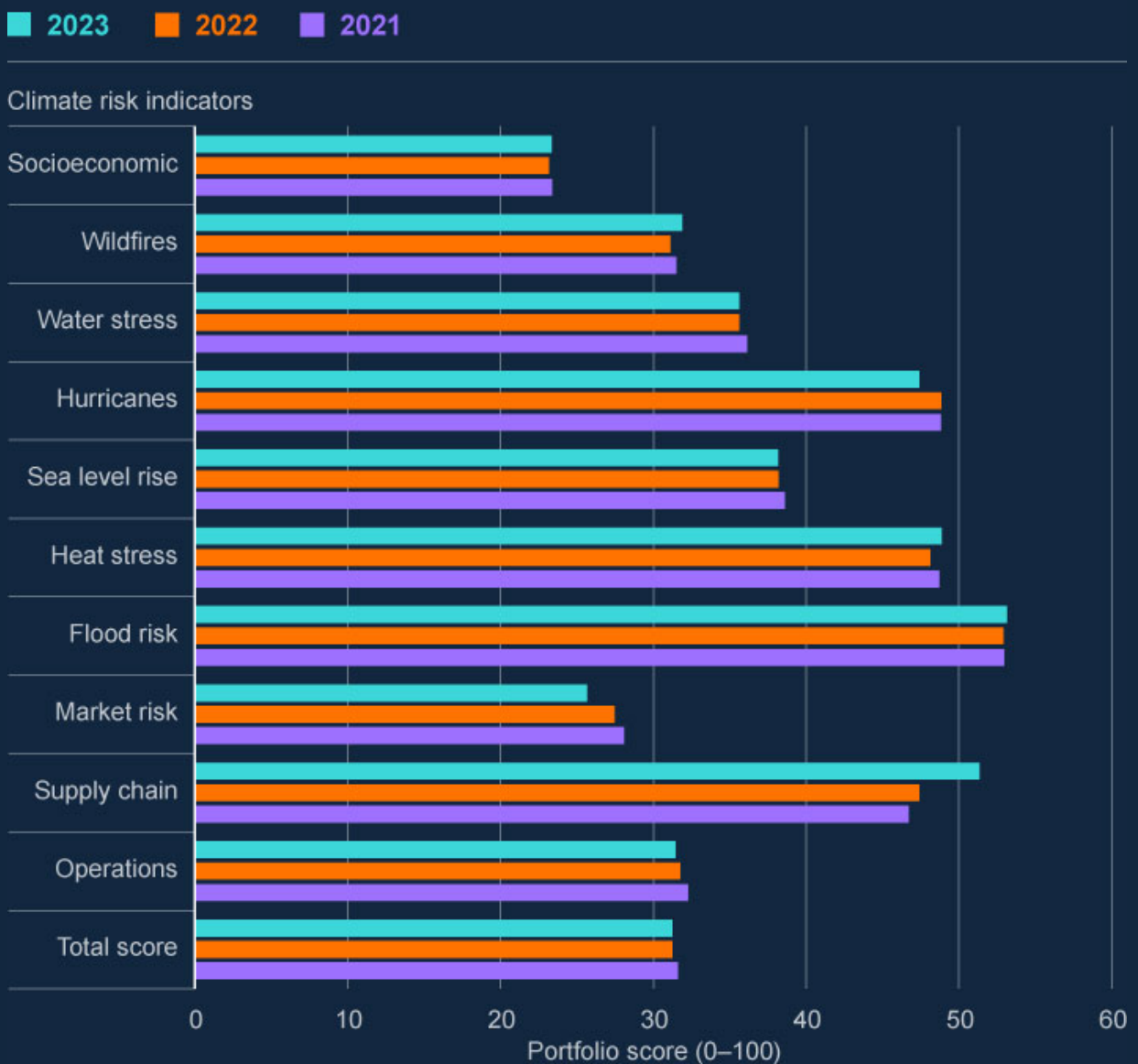
Physical risk

A similar method to the one used for the sovereign holdings can be used for assessing physical risks in the CBPS holdings. The corporate physical risk scores used here represent a weighted average of three main factors that determine a corporate's exposure to physical risk:

- the geographic location of a firm's direct operations;
- the location of firms' supply chains; and
- the location of their consumer markets.

These three channels of risk are weighted 70%, 15% and 15% respectively. Locations are determined based on granular asset-level data mapping, which allows us to consider the impact of regional variation in climate-related physical risks. As for sovereigns, scores estimate potential future physical risks between 2030 and 2040, based on the assumption that the world remains on its current emissions trajectory ('no additional policy action').

Chart 3.10: Physical risk scores for the CBPS holdings (a) (b) (c)



Sources: Moody’s Analytics and Bank calculations.

- (a) ‘Operations risk’ is the summary score for a company’s owned or operated assets across all climate hazards. ‘Socioeconomic risk’ is a measure of a company’s broader operating environment at country level. ‘Market risk’ is the summary score for a company’s exposure to physical climate risk within their end markets. ‘Supply chain risk’ is the summary score for a company’s exposure to physical climate risk within its supply chain, upstream of direct operations.
- (b) This analysis is based on coverage of 90%. Unlisted corporates are not covered by this assessment.
- (c) Figures from previous years have been restated.

The physical risks to CBPS holdings are deemed moderate and broadly in line with those reported last year. Average risks for the portfolio as a whole are generally below the median of companies assessed worldwide by the data provider, indicating lower risk. The

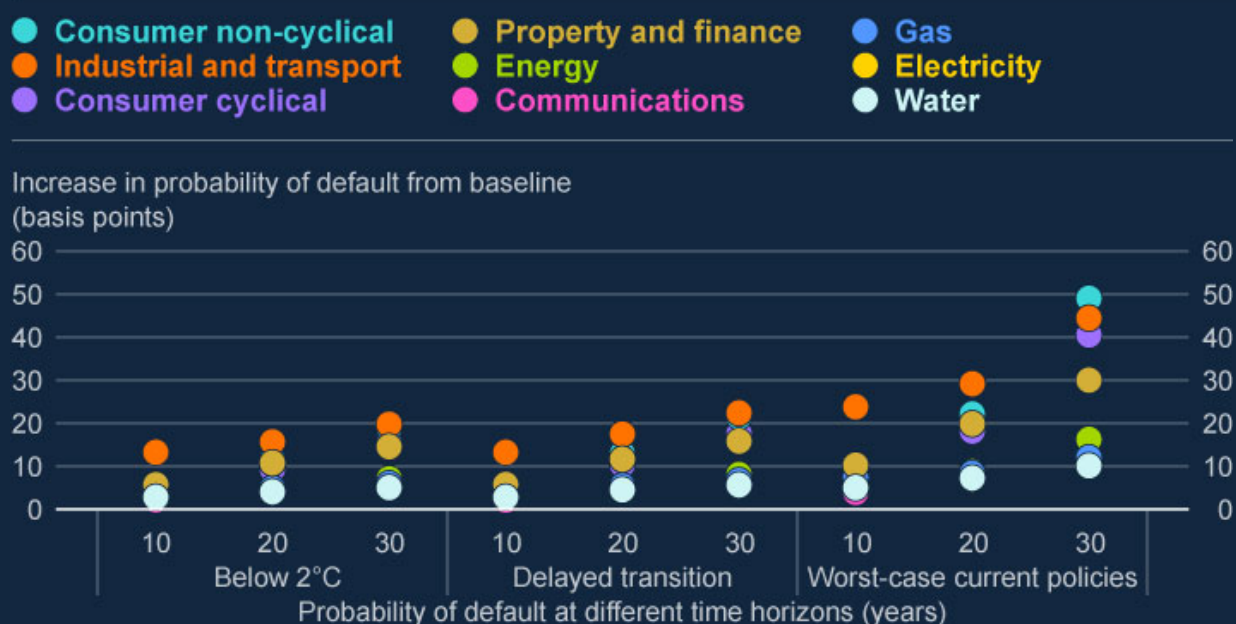
exception to this is 'flooding' (53rd percentile), reflecting that the portfolio predominantly comprises UK companies and the UK is exposed to elevated flooding risk.

Consistent with previous disclosures, the Bank has also analysed the potential impact of physical risks on CBPS companies' probability of default (PD). This allows us to assess the absolute size of any risks we may face.

Chart 3.11 shows that increases in PDs are, unsurprisingly, highest under the scenario associated with the biggest increase in temperatures ('worst-case current policies'). The consumer non-cyclical, industrial and transport and consumer cyclical sectors experience the largest increase in PDs under this scenario. These impacts worsen at longer time horizons as the physical impacts of climate change are expected to intensify if no further policy action is taken. The weighted average annual PD is estimated to increase by 30–60 basis points in year 30, with the exact impact depending on the scenario. This compares to a baseline annual PD of 15–25 basis points.

While results differ from last year's disclosures, this is primarily driven by methodological changes.^[46]

Chart 3.11: Basis point increase in PD by sector due to physical risk under three alternative policy scenarios (a) (b) (c)



Sources: Moody's Analytics and Bank calculations.

(a) The PD estimates only approximate potential increase in risk due to physical risks. They do not factor in the potential impact of transition risks under each of these scenarios.

(b) This chart plots the forward annual PD at 10, 20 and 30-year time horizons. The forward PD measures the expected PD of the company, assuming it survives to that year.

(c) This analysis covers 64% of the portfolio.

In summary, the analysis of physical risks to the Bank's corporate holdings indicates that assets are materially exposed to physical risks in the long run if governments do not introduce additional policies to address climate change.

Key climate-related risks to the Bank's physical operations

Summary

- This year the Bank's reported carbon footprint is the lowest since its target was set in 2015/16, having fallen by 37% (3,666 tCO₂e) compared to last year; a reduction of 69% (13,977 tCO₂e) compared to the baseline year of 2015/16, against which the Bank measures progress.
- Compared to last year, the emissions reduction was mainly due to lower usage of polymer substrate resulting from reduced banknote production (4,452 tCO₂e). Other contributing factors were a fall in gas consumption (843 tCO₂e) counterbalanced by an increase in air travel (1,614 tCO₂e).

- Compared to the baseline year, the emissions reduction was driven mainly by the Bank's permanent move to a contract for the supply of renewable electricity in 2020 (5,563 tCO₂e), reduced banknote production (3,585 tCO₂e) and lower levels of air travel (2,583 tCO₂e).
- The majority of the Bank's reported carbon footprint this year came from natural gas primarily for heating Bank buildings (34%), polymer substrate used in banknote production (34%), and air travel (28%).
- The Bank has published its CTP, setting out its approach to delivering its commitment to reduce emissions from physical operations to net zero by 2040 – its Physical Greenhouse Gas Emissions Target (PGGET).[47] This extends the Bank's emissions reduction commitments beyond its existing '2030 Target', which aims to reduce selected[48] GHG emissions by 63% from 2015/16 to 2030.
- The Bank is on track to meet its PGGET and '2030 Target' and will begin reporting against the PGGET and the CTP transition pathway in this disclosure next year.

The Bank's physical operations are those related to the management and operation of its property, plant and equipment, along with non-financial activities undertaken by its staff. The Bank's physical operations are exposed to risks from both the physical effects of climate change and the transition to a net-zero economy.

- **Physical risks** could affect the maintenance of the Bank's buildings and property. For example, this could arise through an increase in severe weather events resulting in flood or other weather damage. Physical risks could also have an impact on the Bank's staff, for example by disrupting travel.
- **Transition risks** could affect energy usage through fluctuations in energy prices or legislative requirements to decarbonise heating systems.
- Some aspects of the Bank's activities are impacted by both physical and transition risks. One example is the Bank's **supply chain**, which includes companies that may have their own physical and transition risks.

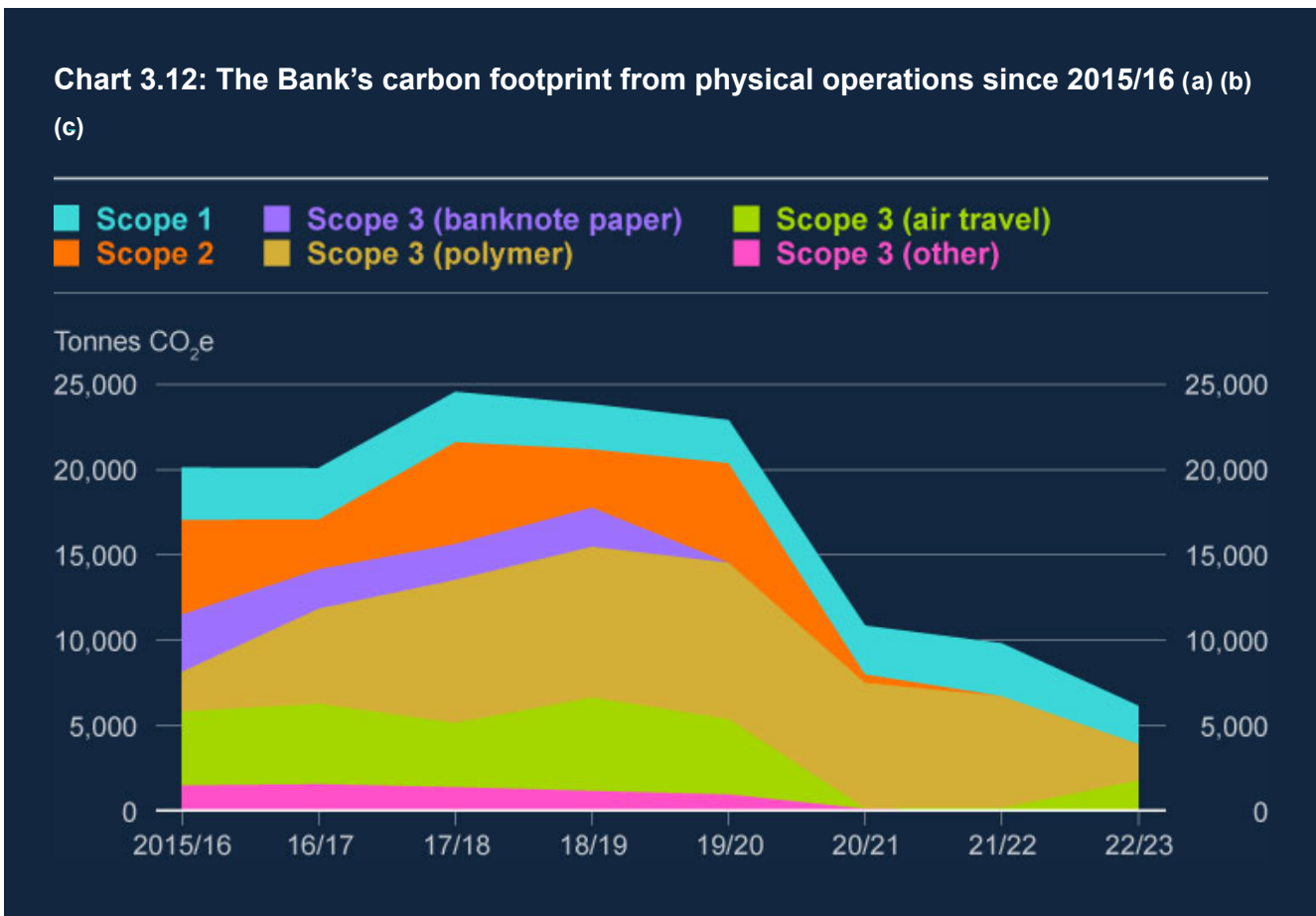
The Bank's carbon footprint for physical operations

One way in which the Bank[49] monitors its exposure to transition risks is by tracking its carbon footprint from physical operations.[50] The sources of emission included in this carbon footprint are set out in

This year the Bank's carbon footprint (6,150 tCO₂e) is the lowest since its '2030 Target' was set in 2015/16, having fallen by 37% (3,666 tCO₂e) compared to 2021/22, and by 69% (13,977 tCO₂e) compared to the baseline year of 2015/16,[51] against which the Bank

measures progress.

The majority of the Bank’s reported carbon footprint for 2022/23 came from the production of polymer substrate used in banknotes (34%), natural gas consumption primarily used for heating the Bank’s buildings (34%) and air travel emissions (28%). If the Bank did not use renewable electricity,[52] its carbon footprint would rise by 5,834 tonnes, which would represent an uplift of 95% compared to the Bank’s actual reported carbon footprint for 2023. [53] Chart 3.12 shows the trends in the Bank’s emissions from physical operations over time.



Source: Bank of England.

- (a) The reduced emissions associated with the Bank’s electricity consumption are due to its shift to an electricity supply contract matched by REGOs. This means that although the actual electricity supplied to the Bank will come from the National Grid (which draws electricity from a range of sources, both renewable and non-renewable), the Bank’s electricity supplier will be obliged to purchase the same amount of renewable electricity.
- (b) In accordance with the GHG Protocol, the Bank’s emissions associated with the polymer substrate used in banknote production do not include the impact of carbon offsets because these have been purchased by the Bank’s suppliers rather than by the Bank.
- (c) Under the GHG Protocol, Scope 1 emissions are direct emissions (eg from running boilers), Scope 2 emissions are indirect emissions from electricity use (eg from powering its office buildings), and Scope 3 emissions are upstream and downstream value chain emissions (eg emissions from buying products from suppliers and emissions from products when customers use them).

Comparison with prior year

The 3,666 tCO₂e reduction in GHG emissions from physical operations since last year is driven by three main factors: reduced banknote production (reduction of 4,452 tCO₂e) and gas consumption (reduction of 843 tCO₂e), offset by an increase in air travel emissions of 1,614 tCO₂e.

The reduced banknote production volumes this year were relative to a period of heightened demand due to the pandemic (2021/22). The reduced demand for banknotes resulted in less polymer substrate used and consequently, a fall in GHG emissions. While the Bank works with suppliers to encourage them to permanently improve the carbon intensity of the polymer substrate, absolute GHG emissions are driven by the number of banknotes printed, which is responsive to demand and is therefore variable. Table 3.B indicates the carbon intensity of the polymer substrate used in banknote production by reporting the GHG emissions for each denomination per 1,000 finished banknotes.

The Bank's polymer suppliers offset any remaining GHG emissions. Although, under the GHG reporting regulations, the impact of carbon offsets purchased by the Bank's polymer suppliers is not reflected in the Bank's own GHG emissions disclosure (eg Tables 3.B and 3.C).

Table 3.B: The Bank's greenhouse gas emissions from polymer substrate production by denomination per 1,000 finished banknotes since 2017/18

Reporting period	£5 (kgCO ₂ e/1,000 banknotes)	£10 (kgCO ₂ e/1,000 banknotes)	£20 (kgCO ₂ e/1,000 banknotes)	£50 (kgCO ₂ e/1,000 banknotes)
2017/18	–	8.6	–	–
2018/19	7.0	7.8	9.4	–
2019/20	–	7.4	8.1	–
2020/21	–	6.5	7.5	9.1
2021/22	–	–	7.4	9.6
2022/23	–	–	8.0	9.3

Source: Bank of England.

The fall in emissions due to gas consumption compared to the previous year was mainly due to refinements to the control systems used to optimise the Bank's heating systems, a change to the Bank's ventilation strategy consistent with post-Covid guidelines (meaning that we have had to heat less air at night) and slightly warmer temperatures.

The increase in business travel emissions is mainly due to the normalisation of travel patterns post-Covid.^[54] While the absolute level of emissions remains significantly lower than pre-Covid levels (2019/20: 4,428 tCO₂e; 2022/23: 1,751 tCO₂e), the upward trend is expected to continue. The Bank continues to take steps to raise internal awareness of the emissions implications of travel choices and more Bank colleagues are now joining overseas events virtually where this is practical. The Bank does not therefore expect business travel emissions to return to pre-Covid levels.

Comparison with baseline year

The reduction in emissions from physical operations compared to the baseline year of 13,977 tCO₂e is driven mainly by the Bank's permanent move to renewable electricity (reduction of 5,563 tCO₂e), the reduced banknote production volumes (reduction of 3,585 tCO₂e) and lower levels of air travel (reduction of 2,583 tCO₂e).

Total electricity consumption fell this year, in line with prior trends. The emissions associated with electricity consumption were eliminated in 2021/22 due to the Bank's purchase of renewable electricity matched by REGOs. This means that although the actual electricity supplied to the Bank will come from the National Grid, which draws electricity from a range of sources, both renewable and non-renewable, the Bank's electricity supplier will be obliged to purchase the same amount of renewable electricity. The Bank continues to monitor developments in the field of renewable energy and is committed to ensuring that it continues to consider the greenest options available in the market each time the electricity supply contract is put up for tender.

Table 3.C sets out the Bank's carbon footprint from physical operations for the current year, the previous year and the baseline year, against which the Bank measures progress. And Annex 4 provides further detail on the Bank's energy consumption.

Table 3.C: The Bank's carbon footprint from physical operations

Type of emissions	Activity	2022/23 (tCO ₂ e)	2021/22 (tCO ₂ e)	2015/16 baseline year (tCO ₂ e)	
Scope 1	Natural gas	2,106	2,949	2,890	
	Oil – generators	1	2	5	
	Vehicles fleet	23	55	97	
	Refrigerants ^(a)	90	72	53	
	Subtotal	2,220	3,078	3,045	
Scope 2	Electricity ^(b)	0	0	5,563	
	Subtotal	0	0	5,563	
Scope 3	Category 1 – Purchased goods and services	Polymer (banknotes) ^(d)	2,108	6,560	2,333
		Paper (banknotes) ^(d)	0	0	3,360
		Water	23	23	60
		Office paper	3	1	96
		Subtotal	2,134	6,584	5,849
	Category 3 – Fuel and energy-related activities	Electricity (transmission and distribution) ^(c)	0	0	1,271
	Category 5 – Waste	Waste	17	12	32
	Category 6 – Business travel	Air travel	1,751	137	4,334
		Rail travel	28	5	33
		Subtotal	1,779	142	4,367
Subtotal	3,930	6,738	11,519		
Total gross emissions (tCO₂e)		6,150	9,816	20,127	

Source: Bank of England.

(a) Emissions associated with the use of refrigerants were not accounted for in 2015/16. The figure shown for the baseline year is an estimate based on an average of the following years.

(b) The emissions associated with the Bank's electricity consumption reflect the fact that the Bank purchases renewable electricity backed by REGOs. This means that although the actual electricity supplied to the Bank will come from the

National Grid (which draws electricity from a range of sources, both renewable and non-renewable), the Bank's electricity supplier will be obliged to purchase the same amount of renewable electricity.

(c) Emissions associated with the transmission and distribution of electricity from its production point to the end-user are referred to as 'Electricity (transmission and distribution)'.

(d) Banknote production was unusually low in 2015/16, the baseline year, ahead of the transition to polymer banknotes.

Working from home

Although working from home has become part of normal behaviours at the Bank, the Bank has so far excluded those emissions from its carbon footprint, recognising that there is no standard methodology for calculating the associated emissions. Last year the Bank reported on analysis it had undertaken to better understand how working from home may potentially impact emissions. The work was repeated this year and it was found that the high-level results had not changed – they highlight the potential for home working to result in a significant increase in emissions. The Bank's energy consumption and gas usage associated with the Bank's buildings remain relatively constant independent of the number of staff working in the building. In the Bank's case, the impact on emissions of home working can therefore broadly be reduced to the combined impact of the changes in commuting and home heating. While there is a reduction in commuting which is estimated to have reduced emissions to some extent, this is more than offset by increased emissions from home heating. Details of the methodology applied are set out in the Bank's [2022 climate disclosure](#).

The emissions associated with staff working from home have been included in the Scope 3 baseline of the PGGET and, as such, will be reported in this climate disclosure in future. The Bank continues to work with external parties to explore methodologies for incorporating these emissions in its carbon footprint, and once a standard methodology is established the calculation of the emissions will be updated.

The Bank's carbon targets for physical operations

In line with the commitment made in last year's climate disclosure, the Bank has published its first [CTP](#) alongside this climate disclosure and the Bank's 2023 [Annual Report](#).

The CTP sets out the Bank's approach to deliver its commitment to reduce emissions from physical operations to net zero by 2040 – the Bank's new PGGET. It outlines the transition pathway for reaching the PGGET, including interim targets and providing details of measures the Bank will adopt in the short, medium and long term to reduce emissions. Over time the Bank's transition pathway will be refined as the Bank adapts its approach in response to developing methodologies and an evolving environment.

The boundary of the PGGET covers the Bank's Scope 1, 2 and 3 emissions, with the exception of financed emissions, and aligns with the reduction in emissions needed to be consistent with limiting the rise in global average temperatures to 1.5°C above pre-industrial levels.

Table 3.D provides a reconciliation between the much larger range of sources of emissions that fall within the boundary of the PGGET and the sources of emissions within the carbon footprint that the Bank has reported on in this climate disclosure to date (Table 3.C). The main driver for the increase is the inclusion of additional categories of Scope 3 emissions. This reflects the progress made by the Bank in developing its capabilities. A detailed breakdown of the total emissions within the boundary of the PGGET is set out in Annex 3 and further details are available in the [CTP](#).

Next year the Bank will begin reporting in this climate disclosure against the PGGET and the transition pathway set out in the CTP.

Table 3.D: Reconciliation of the Bank's carbon footprint from physical operations in this climate disclosure and the sources of emissions included in the CTP (a) (b)

Type of emissions	2022/23 (tCO ₂ e)	2015/16 baseline year (tCO ₂ e)
Total emissions reported in the Bank's climate change disclosure for 2022/23	6,150	20,127
Additional categories of Scope 3 emissions	93,028	124,141
Scope 1 emissions	113	109
Total emissions within the boundary of the PGGET (to begin reporting in the Bank's climate disclosure from 2023/24)	99,291	144,377

Source: Bank of England.

(a) The Scope 1 emissions figure has increased to reflect emissions associated with Bank properties, which were listed for sale in 2019. In line with standard practice, these sources of emissions were excluded from the carbon footprint, which has been reported in this disclosure to date, due to their listing at the time the baseline was determined. As they are no longer listed for sale, they have been included in the calculation of the PGGET baseline. See the CTP for further information.

(b) The Scope 3 emissions adjustment reflects the expansion of the boundary of sources of emissions within the PGGET compared to the carbon footprint on which the Bank reports in this disclosure.

The Bank continues to monitor its '2030 Target' to reduce selected GHG emissions by 63% from 2016 to 2030.^[55] The '2030 Target' is incorporated within the CTP transition pathway. A high-level comparison of the PGGET and '2030 Target' is set out in Table 3.E.

This year the Bank has seen a reduction of 69% in its '2030 Target' emissions relative to the 2015/16 baseline. While that goes beyond the 63% reduction required to meet the '2030 Target', this performance against the target is lower compared to the prior year, when emissions had reduced by 75% relative to the 2015/16 baseline. This change is attributed to increased business travel emissions, which are disclosed and discussed in more detail in the context of the Bank's emissions footprint in Table 3.C. It reflected the expected unwind of the impact of Covid on business travel. The Bank anticipates that business travel is unlikely to revert to 2019/20 levels due to new ways of working.


The Bank is on track to meet its PGGET and '2030 Target' and, in March 2023, its work to date to reduce its own greenhouse gas emissions was recognised by the [City of London's Clean City Award Scheme](#) .

Table 3.E: Comparison of the PGGET and '2030 Target'

Characteristic	Physical Greenhouse Gas Emissions Target	'2030 Target'
Boundary	All Scope 1, 2 and 3 GHG emissions, excluding financed emissions	All Scope 1 and 2 emissions, and travel emissions (which fall within Scope 3)
Target	A reduction of emissions within the boundary to net zero by 2040	A 63% reduction of emissions within the boundary from financial year 2015/16 to 2030
Baseline against which the Bank measures progress	Financial year 2015/16	Financial year 2015/16
Temperature alignment	Aligns with the reduction in emissions needed to be consistent with limiting the rise in global average temperatures to 1.5°C above pre-industrial levels.	
Year from which reported in the Bank's climate disclosure	Financial year 2023/24	Financial year 2019/20

Source: Bank of England.

Annexes

Annex 1: Approach to climate disclosure

The Bank supports climate disclosure as a critical component of the transition to a net-zero economy. The transparency provided through high-quality and comprehensive climate disclosures across the economy can lead to better risk management and more informed decision-making.

In April 2019, the Bank decided to produce its own annual climate disclosure to improve transparency over how climate change was affecting its policy functions and operations. In its climate disclosure, the Bank sets out its own approach to managing climate risks across its operations and in pursuit of its statutory objectives, as reflected in the Bank's remit. The climate disclosure is published at the same time as the Bank's Annual Report.

The Bank has carefully considered its approach to climate disclosure as a central bank and sets out some of its key design choices below.

Framework

The Bank seeks to reflect best practice in producing its climate disclosure, voluntarily drawing on existing international frameworks such as the one recommended by the FSB's TCFD. Consistent with the UK Government's commitments on sustainable disclosure, the Bank expects, in future, to reflect the IFRS Foundation's ISSB standards, where possible.


This climate disclosure covers each of the four pillars of the TCFD framework, with the aim of setting out how the Bank currently considers climate risks across its governance, strategy and risk management functions, including how the Bank uses metrics and targets to monitor and manage those risks. However, reflecting the fact that the TCFD recommendations are not tailored to central banks, the Bank exercises discretion in the way in which it interprets the recommendations in the context of its own climate disclosure. Table A1.1 provides a summary of the way the TCFD recommendations have been reflected in this climate disclosure. The Bank has also factored in [NGFS guidance for central bank disclosure on financial operations](#) , to which the Bank contributed.

Table A1.1 indicates where in this climate disclosure each of the 11 TCFD recommendations is covered. Reflecting the fact that the TCFD recommendations are not tailored to central banks, the Bank exercises discretion in the way in which it interprets the recommendations in the context of its own climate disclosure.

Table A1.1: A summary of where each TCFD recommendation is covered within this climate disclosure

TCFD pillar	TCFD recommended climate disclosure	Climate disclosure reference
<p>Governance</p> <p>Disclose the organisation's governance around climate-related issues and opportunities.</p>	<p>a. Describe the board's oversight of climate-related risks and opportunities.</p>	<p>Court of Directors' oversight of the Bank's management of climate-related risk (Section 1).</p>
	<p>b. Describe management's role in assessing and managing climate-related risks and opportunities</p>	<p>Management's role in assessing and managing climate-related risks (Section 1).</p>
<p>Strategy</p> <p>Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's business, strategy and financial planning where such information is material.</p>	<p>a. Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term.</p>	<p>Key climate-related risks to the Bank's financial operations (Section 3).</p> <p>Key climate-related risks to the Bank's physical operations (Section 3).</p>
	<p>b. Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning.</p>	<p>Strategy (Section 2).</p>
	<p>c. Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.</p>	<p>Key climate-related risks to the Bank's financial operations (Section 3).</p>

TCFD pillar	TCFD recommended climate disclosure	Climate disclosure reference
<p>Risk management</p> <p>Disclose how the organisation identifies, assesses and manages climate-related risks.</p>	a. Describe the organisation's processes for identifying and assessing climate-related risks.	Risk management (Section 3).
	b. Describe the organisation's processes for managing climate-related risks.	Governance (Section 1). Risk management (Section 3).
	c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	Risk management (Section 3).
<p>Metrics and targets</p> <p>Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.</p>	a. Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.	Key climate-related risks to the Bank's financial operations (Section 3). Key climate-related risks to the Bank's physical operations (Section 3).
	b. Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions, and the related risks.	Key climate-related risks to the Bank's financial operations (Section 3). Key climate-related risks to the Bank's physical operations (Section 3).
	c. Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	Key climate-related risks to the Bank's financial operations (Section 3). Key climate-related risks to the Bank's physical operations (Section 3).

Source: Bank of England.

Scope

As a public body, the Bank recognises the need to be transparent and as comprehensive as possible in disclosing the potential impacts of climate risks across its policy functions (monetary policy, financial stability policy, and prudential regulation) and operations (financial asset holdings and physical operations). This section sets out some of the main scoping decisions taken in relation to this climate disclosure.

The Bank was the first central bank to include analysis of the climate risks in financial portfolios held for monetary policy purposes in its climate disclosure. Specifically, the climate disclosure scope covers the Bank's APF as well as the Bank's own securities holdings for both policy implementation and funding the Bank's policy functions (which are classified as Scope 3 emissions under the GHG Protocol).

Figure A1.1: An indicative illustration of the scope of the Bank’s 2023 climate disclosure with reference to the four TCFD pillars

	Governance	Strategy	Risk management	Metrics and targets
Physical operations	In scope	In scope	In scope	All Scope 1 and 2 emissions
				Travel emissions (Scope 3)
				Scope 3 emissions other than travel
Financial operations	In scope	In scope	In scope	Bank’s own securities holdings
				APF (Gilts and CBPS)
				Short-tenor traded assets
				Bank Pension Fund and BEALF


■ In scope
 ■ Out of scope

Source: Bank of England.

As Figure A1.1 illustrates, in three of the four TCFD core elements (governance, strategy and risk management) the scope of this climate disclosure includes all areas of the Bank’s work. Decisions have been taken to limit the scope of the ‘targets and metrics’ element for reasons of practicality and utility. The key scope limitations have been set out below:

- The analysis of key climate risks to the Bank’s physical operations captures Scope 1 emissions (use of natural gas, fuel and refrigerants), Scope 2 emissions (electricity) and travel emissions (which are classified as Scope 3) using the GHG Protocol. Certain Scope 3 emissions from physical operations (emissions associated with the Bank’s supply chain) are currently out of scope due to challenges related to data availability. However, the Bank has included these emissions within the boundary of its CTP and is working with the

Bank's most carbon-intensive and sophisticated suppliers to capture their Scope 3 emissions. Next year the Bank will begin reporting in this disclosure against its CTP transition pathway. Further information is available in the CTP.

- As in prior years, the financial operations analysis covers all long term corporate and sovereign bond assets, including those held within the APF to implement monetary policy. It excludes:
 - lending to financial institutions as part of the Sterling Monetary Framework;
 - outright holdings of short tenor traded assets (given measurement challenges and the fact that the tenor of these exposures makes them less susceptible to climate-related financial risk); and
 - the Bank of England Alternative Liquidity Facility, which is an immaterial part of the Bank's overall balance sheet.
- Although the Bank's Pension Fund is operationally independent from the Bank of England, for completeness it was included in the Bank's financial operations climate disclosure up to 2021. However, in line with [new disclosure requirements](#)  from The Pension Regulator, from 2022 the Bank's Pension Fund has published its own climate disclosure and therefore the portfolio is no longer included in this disclosure.

Annex 2: Climate-related issues reflected in the Bank's remit letters

Part A: Factors relevant to the policy committees

The Monetary Policy Committee (MPC)

The MPC maintains price stability and subject to that support the economic policy of the UK Government, including its objectives for growth and employment.

The MPC remit letter

The Government's economic objective is to achieve strong sustainable and balanced growth. Price and financial stability are essential pre-requisites to achieve this objective in all parts of the UK and sectors of the economy.

To achieve this objective, the Government's economic strategy consists of:

'Supply side reforms to promote investment, skilled employment, infrastructure and enterprise to create a more pro-growth environment in all parts of the UK, increasing long term energy security and delivering net zero.'

The Financial Policy Committee (FPC)

The FPC contributes to achieving the Bank's financial stability objective and subject to that supporting the economic policy of the UK Government, including its objectives for growth and employment.

The FPC remit and recommendations letter

The Government's economic objective is to achieve strong sustainable and balanced growth. Price and financial stability are essential pre-requisites to achieve this objective in all parts of the UK and sectors of the economy.

To achieve this objective, the Government's economic strategy consists of:

'Supply side reforms to promote investment, skilled employment, infrastructure and enterprise to create a more pro-growth environment in all parts of the UK, increasing long term energy security and delivering net zero.'

Matters that the FPC should regard as relevant to the Bank's financial stability objective and the responsibility of the FPC in relation to the achievement of that objective:

'The FPC should also regard risks from climate change as relevant to its primary objective. Climate change may pose risks to the stability of the UK financial system, including physical risks and transition risks resulting from a transition to a net-zero economy that is sudden,

disorderly or more generally fails to appropriately balance environmental and economic factors.’

Responsibility of the FPC in relation to support for the Government’s economic policy – recommendations regarding support for the Government’s economic policy towards the financial services industry:

‘The FPC should act with a view to supporting the Government’s overall strategy for financial services, where doing so does not conflict with the achievement of the FPC’s primary objective. In particular: Climate Change and Energy Security: The Government aims to align private sector financial flows with environmentally sustainable and resilient growth, in a manner that is consistent with the important role that the financial system will play in supporting the UK’s energy security – including in investment in transitional hydrocarbons, like gas – as part of the UK’s pathway to net zero.’

Recommendations regarding facilitating finance for productive investment:

‘The FPC should act with a view to facilitating the supply of finance for productive investment provided by the UK’s financial system, where doing so does not conflict with the FPC’s primary objective. This includes, but is not limited to, venture and growth equity to support the UK’s scale-up companies and finance the UK’s energy security and pathway to net zero.’

The Prudential Regulation Committee (PRC)

The PRC has primary objectives of safety and soundness and policyholder protection, secondary objectives of competitiveness.

The PRC’s Capital Requirements Regulation (CRR) rules have regard (FSMA)

When making CRR rules and Holdco rules, the PRA must, among other things, have regard to the target in section 1 of the Climate Change Act 2008 (carbon target for 2050).

The PRC recommendation letter

The Government’s economic objective is to achieve strong sustainable and balanced growth. Price and financial stability are essential pre-requisites to achieve this objective in all parts of the UK and sectors of the economy.

To achieve this objective, the Government’s economic strategy consists of:

‘Supply side reforms to promote investment, skilled employment, infrastructure and enterprise to create a more pro-growth environment in all parts of the UK, increasing long term energy security and delivering net zero.’

Matters about aspects of the UK Government's economic policy to which the PRC should have regard:

'The PRC should therefore have regard to supporting the UK Government's ambition to encourage economic growth in the interests of consumers and businesses including: the UK Government's ambitions for the provision of sustainable finance and the supply of long term investment to support UK economic growth, including the supply of finance for infrastructure projects.'

New PRC climate and environment regulatory principles

The UK Government introduced new climate and environment regulatory principles in the FSMA 2023, but at the date of publication these are not yet in force – the regulatory principles below are therefore for information only and will be integrated into the PRA's work and considered within the Bank's climate-related financial disclosure 2023/24.

'Have regard to the need to contribute towards achieving compliance by the Secretary of State with section 1 of the Climate Change Act 2008 (UK net zero emissions target) and section 5 of the Environment Act 2021 (environmental targets) where each regulator considers the exercise of its functions to be relevant to the making of such a contribution.'

The Financial Markets Infrastructure (FMI) regulator

The FMI regulator exercises the FMI functions in a way that advances the financial stability objective. The functions of the FMI regulator were introduced by the FSMA 2023, but at the date of publication are not yet in force. The details below are therefore for information only for the purposes of this disclosure and will be considered within the Bank's future climate-related financial disclosure 2024.

The FMIR's climate regulatory principles (FSMA 2023)

Have regard to the desirability of sustainable growth in the economy of the United Kingdom in the medium or long term, including in a way consistent with contributing towards achieving compliance by the Secretary of State with section 1 of the Climate Change Act 2008 (UK net-zero emissions target) and section 5 of the Environment Act 2021 (environmental targets) where the Bank considers the exercise of its FMI functions to be relevant to the making of such a contribution.

The FMIR's recommendations by HM Treasury (FSMA 2023)

None yet made.

Part B: Other factors relevant to the Bank of England as a public authority

Section 40 Natural Environment and Rural Communities Act 2006 – The General Biodiversity Objective

Before the end of 2023 the Bank must consider what action it can take, consistent with the proper exercise of its functions, to further the general biodiversity objective ('the conservation and enhancement of biodiversity in England through the exercise of functions in relation to England').

Following its consideration the Bank 'must, unless it concludes there is no new action it can properly take:

'determine such policies and specific objectives as it considers appropriate for taking action to further the General Biodiversity Objective, and take such action as it considers appropriate, in the light of those policies and objectives, to further that objective.'

After that, the Bank must subsequently make consideration of such matters at least every five years.

Annex 3: The Bank's greenhouse gas emissions included within the boundary of the Physical Greenhouse Gas Emissions Target

Table A3.1 sets out a detailed analysis of the greenhouse gas emissions in scope of the Bank's Physical Greenhouse Gas Emissions Target (PGGET), against which the Bank will begin reporting in this disclosure next year (2023/24). It includes a reconciliation between those emissions and the carbon footprint, which the Bank has reported historically and which is reported in this disclosure. Further details are available in the Bank's Climate Transition Plan.

Table A3.1: The Bank's greenhouse gas emissions included within the boundary of the Physical Greenhouse Gas Emissions Target

Type of emissions ^(a)	Activity	2015/16 (tCO ₂ e)	2022/23 (tCO ₂ e)
Scope 1	Natural gas	2,890	2,106
	Oil – generators	5	1
	Vehicles fleet	97	23
	Refrigerants	53	90
	Subtotal	3,045	2,220
Scope 2	Electricity	5,563	0
Scope 3 – Category 1 Purchased goods and services	Polymer (notes)	2,333	2,108
	Paper (notes)	3,360	0
	Water	60	23
	Office paper	96	3
	Subtotal	5,849	2,134
Scope 3 – Category 3 Fuel and energy related	Electricity (transmission and distribution)	1,271	0
Scope 3 – Category 5 Waste	Waste	32	17
Scope 3 – Category 6 Business travel	Air travel ^(b)	4,334	1,751
	Rail travel	33	28
	Subtotal	4,367	1,779
Total emissions (calculated using the boundary from the Bank's FY21/22 Climate Change Disclosure) ^(c)		20,127	6,150

Type of emissions (a)	Activity	2015/16 (tCO _{2e})	2022/23 (tCO _{2e})
Scope 3 – Category 1 Purchased goods and services	Manufacturing (not elsewhere classified)	29,579	14,227
	Renting of machinery and equipment and other business activities	19,670	28,349
	Post and telecommunications	11,657	10,407
	Electrical and optical equipment	8,606	3,205
	Other	8,223	1,931
	Health and social work	4,398	3,391
	Food, beverages and tobacco	3,100	2,395
	Public administration and defence; compulsory social security	2,971	2,228
	Other supporting and auxiliary transport activities; activities of travel agencies	2,857	67
	Financial intermediation	1,992	1,090
	Pulp, paper, printing and publishing	1,874	761
	Education	1,826	678
	Construction	1,638	1,047
	Machinery (not elsewhere classified)	1,305	1,119
	Other community, social and personal services	1,258	964
	Chemicals and chemical products	1,159	87
	Real estate activities	937	1,099
	Textiles and textile products	86	32
	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of fuel	83	8
		Subtotal	103,219
Scope 3 – Category 2 Capital goods		16,358	15,046
Scope 3 – Category 3 Fuel and energy related activities		2,720	1,779

Type of emissions ^(a)	Activity	2015/16 (tCO _{2e})	2022/23 (tCO _{2e})
Scope 3 – Category 7	Employee commuting	1,844	506
Scope 3 – Category 7	Employee working from home	0	2,613
Scope 3 emissions included as expansion of ambition		124,141	93,028
Adjustments versus previously disclosed baseline ^(e)		109	113
Total emissions within the boundary of the PGGET ^(d)		144,377	99,291

Source: Bank of England.

(a) Scope 3 emissions are modelled based on expenditure data.

(b) For the first time in 2022/23 air travel includes emissions associated with hotel stays.

(c) These emissions are reported in the BCCD in financial years up to and including 2022/23.

(d) These emissions will be reported on in the BCCD from financial year 2023/24 onwards.

(e) These are adjustments relative to the baseline reported against in the BCCD in financial years up to and including 2022/23. They are Scope 1 emissions associated with Bank properties, which had previously been excluded from the reporting boundary as they were listed for sale in 2019. This approach is in line with standard practice. See the CTP for further information.

Annex 4: Energy consumption

The Streamlined Energy and Carbon Reporting (SECR) regulations are designed to increase the awareness of energy costs within organisations, help reduce overall impact on climate change and increase transparency.

SECR requires large companies to report annually on energy consumption, related carbon emissions and metrics and historical data. Where a subsidiary organisation needs to report, the parent organisation can choose to publish a group-level climate disclosure. Although the Bank does not fall within the criteria for the SECR regulations, some of the Bank's subsidiary organisations do, and therefore the Bank has chosen to comply with SECR requirements to follow best practice.

Table A4.1 and Chart A4.1 below show the electricity and natural gas consumption for all Bank sites, as well as fuel purchased for travel (direct purchase of fuel for Bank-owned and operated vehicles, plus staff mileage). This does not include fuel used for air or rail travel.

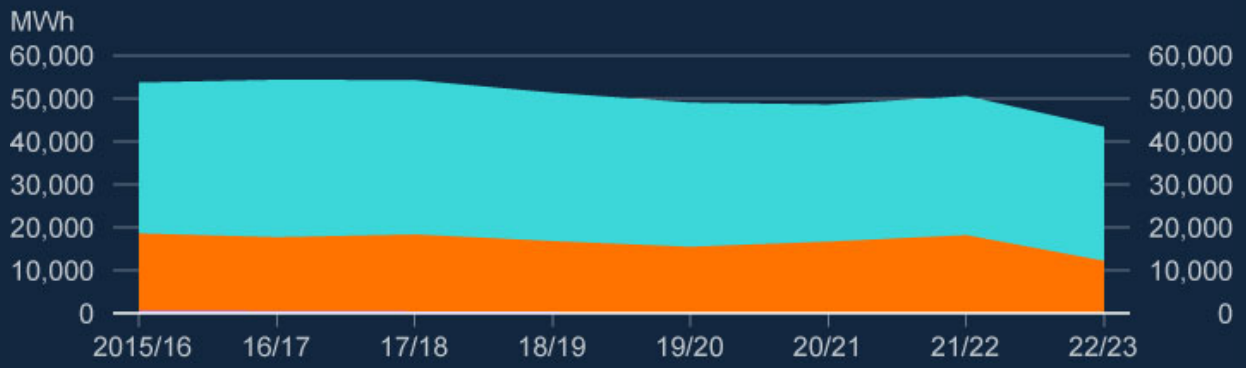
Table A4.1 Energy consumption at all Bank sites since 2018/19

Total energy use (MWh)	2018/19	2019/20	2020/21	2021/22	2022/23
Electricity	34,432	33,511	31,816	32,273	31,075
Gas	16,462	15,143	16,522	18,047	12,157
Transport	401	370	202	203	88
Total	51,295	49,024	48,540	50,523	43,321

Source: Bank of England.

Chart A4.1: Energy consumption at all Bank sites since 2015/16

■ Electricity ■ Gas ■ Transport



Source: Bank of England.

Annex 5: Abbreviations

APF – Asset Purchase Facility.

ARCo – Audit and Risk Committee.

Bank – Bank of England.

BEALF – Bank of England Alternative Liquidity Facility.

BCBS – Basel Committee on Banking Supervision.

CBES – Climate Biennial Exploratory Scenario.

CBPS – Corporate Bond Purchase Scheme.

CCBS – Centre for Central Banking Studies.

CEO – Chief Executive Officer.

CFO – Chief Financial Officer.

CFRF – Climate Financial Risk Forum.

CO₂ – carbon dioxide.

COO – Chief Operating Officer.

Court – Court of Directors.

Covid – severe acute respiratory syndrome coronavirus 2.

CRR – Capital Requirements Regulation.

CTP – Climate Transition Plan.

EDCSG – Executive Directors' Climate Steering Group.

EPC – Energy Performance Certificate.

FMI – Financial Markets Infrastructure.

FPC – Financial Policy Committee.

FSB – Financial Stability Board.

FSMA 2023 – Financial Services and Markets Act 2023.

FSMB – Financial Services and Markets Bill.

G7 – Group of Seven – Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.

G20 – Group of Twenty – Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States and the European Union. Spain is also invited as a permanent guest.

GDP – gross domestic product.

GHG – greenhouse gas.

Gilts – sterling sovereign government bonds.

IAIS – International Association of Insurance Supervisors.

IFRS – International Financial Reporting Standards.

ISSB – International Sustainability Standards Board.

ITR – Implied Temperature Rise.

MPC – Monetary Policy Committee.

NAA – no additional action.

NDC – Nationally Determined Contribution.

NGFS – Network for Greening the Financial System.

PCAF – Partnership for Carbon Accounting Financials.

PD – probability of default.

PGGET – Physical Greenhouse Gas Emissions Target.

PRA – Prudential Regulation Authority.

PRC – Prudential Regulation Committee.

REGO – Renewable Energy Guarantee of Origin.

SBTi – Science Based Targets initiative.

SECR – Streamlined Energy and Carbon Reporting.

SFE – Sovereign Financed Emissions.

SFWG – Sustainable Finance Working Group.

SIF – Sustainable Insurance Forum.

SMF – Senior Management Function.

SMF Climate – SMF responsible for the financial risks from climate change.

SS3/19 – Supervisory Statement 3/19.

TCFD – Task Force on Climate-related Financial Disclosures.














tCO_{2e} – tonnes carbon dioxide equivalent.




TPT – Transition Plan Taskforce.


UNFCCC – United Nations Framework Convention on Climate Change.

WACI – Weighted Average Carbon Intensity.

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1. For the purpose of this report 'banks' includes both banks and building societies.
 2. The sources of emissions included in the '2030 Target' are limited to Scope 1 emissions (use of natural gas, fuel and refrigerants), Scope 2 emissions (electricity) and travel emissions (which fall within Scope 3).
 3. Annex 2 provides further information on the Bank's remit and recommendation letters.
 4. The sources of GHG emissions included in the PGGET are set out in Annex 3. They are significantly wider than those currently included in the Bank's carbon footprint, reflecting advances in the Bank's capabilities.
 5. The sources of GHG emissions included in the '2030 Target' are limited to Scope 1 emissions (use of natural gas, fuel and refrigerants), Scope 2 emissions (electricity) and travel emissions (which fall within Scope 3).
 6. Section 3 sets out further detail on the Bank's risk management.
 7. The Financial Services and Markets Act (FSMA) 2023 has introduced environmental regulatory principles for the Prudential Regulation Authority (PRA) and the Bank as Financial Markets Infrastructure (FMI) regulator. These regulatory principles are not yet in force and are not addressed in this climate disclosure but will be included in the Bank's climate-related financial disclosure 2024.
 8. On 29 June 2023 the FSMA 2023 introduced a fourth statutory committee, the Financial Markets Infrastructure Committee. The new committee is not detailed in this climate disclosure but will be included in the Bank's climate-related financial disclosure 2024.
 9. The Bank's mission is to promote the good of the people of the United Kingdom by maintaining monetary and financial stability.
 10. Angeli et al (2022), [Climate change: possible macroeconomic implications](#), Bank of England Quarterly Bulletin.

11. On 29 June 2023 the FSMA 2023 introduced a fourth statutory committee, the Financial Markets Infrastructure Committee. The new committee is not detailed in this climate disclosure, which covers the year ended 28 February 2023, but will be included in future climate disclosures.
12. Details are set out in previous climate disclosures.
13. [Climate capital – speech by Sam Woods](#).
14. [Central banking and supervision in the biosphere: an agenda for action on biodiversity loss, financial risk and system stability](#) , NGFS Occasional Paper, Banque de France.
15. [Task force ‘Biodiversity Loss and Nature-related Risks’ Mandate – April 2022/April 2024](#) .
16. [Fiscal risks report – July 2021](#) , Office for Budget Responsibility.
17. Angeli et al (2022), [Climate change: possible macroeconomic implications](#), Bank of England Quarterly Bulletin.
18. [Transition Plan Taskforce – publications](#) .
19. [Guide on climate-related disclosure for central banks](#) , NGFS.
20. Details can be found in the [Interim Report and Roadmap](#)  for mandatory TCFD-aligned climate disclosure requirements, which was published in November 2020 by the UK Government-Regulator TCFD Taskforce, of which the Bank is a member.
21. Association of Southeast Asian Nations.
22. SIF is a global network of insurance supervisors and regulators working together on sustainability challenges facing the insurance sector, including climate change.
23. [Supervisory and Regulatory Approaches to Climate-related Risks: Final report](#) , Financial Stability Board.
24. [Climate Scenario Analysis by Jurisdictions: Initial findings and lessons](#) , Financial Stability Board.
25. [Progress Report on Climate-Related Disclosures](#) , Financial Stability Board.
26. [Asset Purchase Facility: corporate bond sales programme – Market Notice 18 August 2022](#).
27. [Asset Purchase Facility: Gilt Sales – Market Notice 16 December 2022](#).
28. This approach is in line with [reporting requirements for UK Pension Funds](#) .
29. Bell et al (2023), [The greening of lending: mortgage pricing of energy transition risk](#), Bank of England Staff Working Paper, No. 1,016.
30. This is assuming that debt affordability is already impacted by a severe interest rate stress which increases households’ sensitivity to energy price shocks.
31. Currently the impact of flood risk on insurance premia is limited by FloodRe, a joint initiative between the UK Government and insurers. This initiative is planned to be in place until 2039.
32. [Global energy and CO2 emissions in 2020](#) , International Energy Agency.
33. [World Bank – DataBank](#) .
34. [Unmasking the impact of Covid-19 on businesses](#) , World Bank.

35. We have not included analysis of alternative 'consumption basis' emissions because such estimates are judged to be less reliable and may be less directly linked to transition risks. This is because countries may find it easier to adjust their consumption habits than to replace their production facilities. Eg, a country that is heavily reliant on energy-intensive production processes may struggle to pivot to a new economic model at short notice.
36. Sovereign Financed Emissions (SFE) is an alternative measure of carbon footprint. SFE measures the financed emissions attributed to an asset portfolio by calculating the proportion of the sovereign issuer's total debt held by the portfolio and multiplying this 'attribution factor' by the sovereign issuer's total emissions. The limitation of this metric compared to WACI is that it tends to mechanically increase with the size of a portfolio. As such, it does not provide a good sense of potential transition risks relative to an institution's ability to absorb such losses. SFE of the APF fell to 132.7 million tonnes of CO₂ equivalent (MtCO_{2e}) in 2023 from 176.9 MtCO_{2e} in 2022. This reduction is a result of a decrease in the size of the APF year on year. SFE of the Bank's own securities is 4.9 MtCO_{2e} in 2023, which is the same as in 2022.
37. [World Bank Data – Total natural resource rents \(% of GDP\)](#) .
38. Overshoots are calculated against the NGFS's 'Below 2°C' scenario. This scenario is a global carbon budget with a 67% chance of achieving <2°C alignment and a policy ambition of 1.7°C. Therefore, implied temperature rise is calculated here as 1.7°C + the additional temperature rise attributed to aggregated overshoots against the 'Below 2°C' carbon budget.
39. [Greening our Corporate Bond Purchasing Scheme \(CBPS\)](#).
40. Scope 1 emissions are direct emissions from owned or controlled sources and Scope 2 emissions are indirect emissions from the generation of purchased energy.
41. Financed emissions is an alternative measure of carbon footprint, which seeks to estimate the amount of emissions (Scope 1 and 2 for all firms and Scope 3 for some firms prescribed in the [PCAF standard](#) ) that can be ascribed to an investor based on how much of a company's 'financing' that investor provides. **The financed emissions associated with the Bank's CBPS holdings fell 58% in the year to February 2023, from 5.5 to 2.2 MtCO_{2e}.** This was driven by a significant decrease in the size of the portfolio (due to unwind).
42. MSCI data was only available for 73% of CBPS holdings. We therefore rescale the portfolio so that those 73% of holdings represent 100% of the CBPS and calculate ITR on this basis.
43. Some companies' targets are classified by the SBTi as being between two categories, this can be seen in Chart 3.9.
44. The Bank presents the overall impact on company value (ie equity and debt combined). The impact on senior debt instruments alone, such as bonds in the CBPS, will be smaller than the combined equity and debt impact.
45. [NGFS version 2 scenarios](#). .
46. One key change is that the most severe scenario used by the Bank's data provider, Moody's Analytics, is now the 'worst-case current policies' scenario, instead of a 'no additional action' (NAA) scenario as used in the 2022 disclosure. These scenarios differ in two ways. First, while the NAA scenario considered risks occurring until 2080, the new scenario only considers risks out to 2050. This is to make it more directly comparable to the other scenarios used (ie 'Below 2°C' and 'Delayed transition'). Second, the new scenario considers a world in which the consequences of not taking any additional actions are particularly severe (95th percentile), while the NAA scenario focused on expected impacts (ie 50th percentile). While the first change makes the new scenario less severe, the second one partially offsets this.
47. The sources of GHG emissions included in the PGGET are set out in Annex 3. They are significantly wider than those currently included in the Bank's carbon footprint, reflecting advances in the Bank's capabilities.
48. The sources of GHG emissions included in the '2030 Target' are limited to Scope 1 emissions (use of natural gas, fuel and refrigerants), Scope 2 emissions (electricity) and travel emissions (which fall within Scope 3). For further information see Annex 3 of the [Bank's climate-related financial disclosure 2022](#).

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49. All references in this section to 'the Bank' apply to the Bank and its subsidiaries (including Bank of England Asset Protection Fund Ltd).
50. Table 3.B sets out the sources of emission included in the Bank's carbon footprint from physical operations, which is reported in this climate disclosure.
51. All references to the baseline year relate to 2015/16.
52. The Bank uses an electricity supply contract matched by Renewable Energy Guarantee of Origins (REGOs).
53. This calculation uses the UK national average carbon factor for electricity to estimate the carbon emissions associated with the Bank's electricity consumption.
54. In 2022/23 the Bank modified its calculation of air travel emissions to include emissions due to hotel stays. The 1,721 tCO₂e air travel emissions include 47 tCO₂e related to hotel stays.
55. The target is informed by the SBTi methodology and has been [verified by the Carbon Trust](#)  as consistent with aligning emissions from the Bank's physical operations to the goals of the Paris Agreement. Further information on the scope and calculation of this target is set out in Annex 3 of the [Bank's climate-related financial disclosure 2022](#).