

## Prudential Regulation Authority

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[Dear CEO]

### **Thematic feedback on the PRA's supervision of climate-related financial risk and the Bank of England's Climate Biennial Exploratory Scenario exercise.**

Three and a half years have passed since we published Supervisory Statement (SS) 3/19,<sup>1</sup> which detailed our supervisory expectations for firms' management of climate-related financial risks (climate risks). In that time, the global economic outlook has become more challenging due to the effects of the Covid-19 Pandemic and Russia's invasion of Ukraine.

At the same time, the physical and transitional effects of climate change create financial risks and economic consequences, which can affect the safety and soundness of firms the Bank regulates, the stability of the wider financial system, and the economic outlook. The need for firms to continue their work to understand and address climate risks therefore remains.

In my last letter to firms on climate change,<sup>2</sup> I said that by the end of 2021 firms should have fully embedded their approaches to managing climate risks. Accordingly, in 2022 we started actively supervising firms against our supervisory expectations.<sup>3</sup> This letter

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<sup>1</sup> April 2019: <https://www.bankofengland.co.uk/prudential-regulation/publication/2019/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change-ss>.

<sup>2</sup> July 2020: <https://www.bankofengland.co.uk/prudential-regulation/letter/2020/managing-the-financial-risks-from-climate-change>.

<sup>3</sup> October 2021: <https://www.bankofengland.co.uk/prudential-regulation/publication/2021/october/climate-change-adaptation-report-2021>.

provides a summary of capabilities, which we would expect firms to be able to demonstrate by now, sets out thematic observations on firms' levels of embeddedness, and provides examples of effective practices identified. It also provides updates on the Bank of England's (the Bank's) work in related areas, and details of information sources which firms may find helpful. It draws on our supervision of firms of all sizes, as well as engagement with specific firms, our thematic climate work and the findings from the Bank's Climate Biennial Exploratory Scenario exercise, the results of which were published in May 2022.<sup>4</sup>

## Levels of embeddedness and effective practices

Overall, we have observed that banks and insurers across the sector have taken concrete and positive steps to implement our expectations. Governance of climate risks has advanced in most firms and there is a general improvement in risk management practices. This is testament to firms' investment and has demonstrated that, even where firms still need to refine their approach, the steps taken invariably advance firms' capabilities and progress their ability to address the opportunities as well as the risks from climate change. Having said that, while some firms have made considerable progress, the levels of embedding vary and the assessment of supervisors is that further progress is needed by all firms.

Every firm in scope of SS3/19 should by now be able to: demonstrate how it is responding to our expectations and set out the steps being taken to address barriers to progress, and have measures in place that allow it to enhance approaches as industry practice develops and new data and tools become available. Where a firm has not taken action to embed any element of our expectations, it should be able to articulate why that is the case and the steps it plans to take to address any constraints.

Annex A of this letter seeks to support firms in their continued work to embed SS3/19, by providing more detail on our observations on whether firms are meeting our supervisory expectations and highlighting examples of effective and less effective practices identified.

While we expect approaches to continue to evolve, we summarise below a non-exhaustive list of areas where, by now, firms would be expected to demonstrate capabilities in meeting our supervisory expectations. The PRA is aware of the need to be proportionate, and smaller firms should determine how these capabilities might map to the nature, scale, and complexity of their business.

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<sup>4</sup> May 2022: <https://www.bankofengland.co.uk/stress-testing/2022/results-of-the-2021-climate-biennial-exploratory-scenario>.

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## Governance

- **Board oversight** – Boards and Executives should by now be able to demonstrate that they understand how their firm is integrating climate considerations into their business strategies, planning, governance structures, and risk management processes. They should be able to show that the approach across these areas is coherent and supported by available metrics and risk appetites that provide an effective measure of vulnerabilities to climate risk. As part of managing the associated financial risks, firms should be able to demonstrate that, where appropriate, climate is considered in advance of business and strategic decisions.

## Risk management

- **Frameworks and tolerances** – By now firms should have embedded an appropriate understanding of climate risk within their Risk Management Framework (RMF), Risk Appetite Statement (RAS), committee structures, and three lines of defence, using both qualitative and quantitative measures. The RAS should be coherent with the RMF and tailored to each firm's business strategy, business model, and balance sheet.
- **Modelling** – As part of their RMF work, firms should be able to demonstrate that climate risks have been appropriately factored into their quantitative analysis - for example through properly developed quantitative climate risk modelling capabilities, appropriate metrics and the use of prudent assumptions and proxies where data gaps exist. Firms should be able to explain what work has been undertaken to identify areas requiring development, and what actions are being taken to address identified data gaps relevant to their business.<sup>5</sup>
- **Counterparties' exposures** – To aid the consideration of climate risks within their business strategy and risk appetite, firms should have a counterparty engagement strategy. This engagement should inform firms about how their counterparties will look to manage climate exposures, for example by developing new products and services as they change the footprint of their business over time.

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<sup>5</sup> CFRF guides to support this work are available. These include guides on: scenario analysis October 2021: <https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2021-scenario-analysis.pdf>; and climate data and metrics, October 2021: <https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2021-data-metrics.pdf>.

- **Capital** – Firms’ Own Risk and Solvency Assessments (ORSAs) or Internal Capital Adequacy Assessment Processes (ICAAPs) should by now, provide sufficient contextual information to allow a reader to understand analysis of climate risks and capital. Particular attention should be given to disclosure of methodologies and underlying assumptions, judgements, proxies, and consequent uncertainties. Firms should also by now be providing sufficient detail on their stress testing calculations and methodologies to allow a reader to assess whether assumptions and judgements are appropriate, and whether outputs are being correctly factored into the firm’s climate decisions. All firms should be able to explain to their supervisors, how they have got comfortable that any material climate risks are appropriately capitalised.

### Scenario analysis

- **Embedding** – Firms should by now be able to satisfy supervisors that they have embedded scenario analysis into their risk management and business planning processes and are able to demonstrate how the results are being used in practice, including their impact on strategic and business decision-making.

This is an evolving area, so firms should be able to explain how their current capabilities will develop over time. They should also be able to explain how the selected scenarios are relevant to their strategy and business and appropriately test their specific vulnerabilities, for example the extent to which scenarios cover extreme and less frequent events.

### Data

- **Approach to address gaps** – Firms should now be able to explain how they identify their significant data gaps, what plans they have to close those gaps, and what processes they have in place to ensure that developments in data and tools will be identified and incorporated into their approach.

Where data gaps exist, all firms should have put in place contingency solutions using appropriately conservative assumptions, judgements, and proxies.

### Climate and regulatory capital

In October 2021, the Bank published its Climate Change Adaptation Report, which examined the relationship between climate change and the banking and insurance regulatory capital regimes, including plans for future work. The Bank is working as part of the Basel Committee on Banking Supervision (BCBS) to understand how climate risks interact with the BCBS standards and similar conversations are taking place with international insurance standard-setting bodies. Domestically, we facilitated a

conference between Wednesday 19 October and Thursday 20 October 2022 that was attended by a broad range of stakeholders and experts to consider the issues in detail. We will update on our thinking on these issues in light of the conference.

## Climate and accounting

As the approach taken by firms to account for climate risk evolves, we anticipate that firms will gain a greater level of clarity on the materiality of the climate-related risks that are likely to impact their balance sheets. Consistent with our observations on firms' approaches to SS3/19 more generally, we expect firms' financial reporting-related priorities for 2022 and beyond to include enhancing their climate-related data and modelling capabilities, governance and controls, and market disclosures. To encourage firms to address capability gaps, we will play an active role in promoting high quality and consistent accounting for climate change. This reflects the extent to which accounting numbers feed into regulatory metrics, particularly for banks. We set out further detail on our approach to climate-related accounting in Annex B.

We have also analysed the written auditor reports for some larger UK head-quartered banks and building societies, and have published the thematic feedback on the practices observed.<sup>6</sup>

## Resources to assist firms in embedding the SS3/19 expectations

We recognise that making progress in this area is not straightforward, especially for smaller firms. As a result, we have worked to ensure that a number of resources are available to assist this process. This includes the following:

- This letter adds to our published guidance and observations on firm practices in embedding an understanding of climate risks. The previous publications, listed in Annex C, remain a relevant resource for firms as they work to embed the expectations set out in SS3/19.
- In 2019, jointly with the FCA, we convened the Climate Financial Risk Forum (CFRF) to develop guidance and tools that support firms in identifying and managing climate risk. All of the CFRF's outputs<sup>7</sup> are publically available and cover climate risk management, scenario analysis, disclosure, data and metrics, and innovation.

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<sup>6</sup> Letter from Victoria Saporta 'Thematic feedback from the 2021/2022 round of written auditor reporting, October 2022: <https://www.bankofengland.co.uk/prudential-regulation/letter/2022/october/thematic-feedback-2021-2022-written-auditor-reporting>.

<sup>7</sup> Available at: <https://www.bankofengland.co.uk/climate-change/climate-financial-risk-forum>.

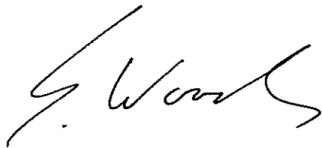
- Standard-setting bodies and other organisations have also published guidance that firms may wish to consider. Links to some key documents are also included in Annex C.

## Next steps

Compliance with the expectations in SS3/19 will be assessed on an ongoing basis and firms should continue to demonstrate effective management of climate risks through regular supervisory engagements and reviews. It is particularly important that their Board and senior management team, including the designated Senior Manager Function (SMF) for climate, demonstrate appropriate oversight and control of the firm-wide climate agenda.

Firms judged not to have made sufficient progress in embedding our expectations should expect to be asked to provide a roadmap explaining how they intend to overcome the gaps. Supervisors will determine whether additional steps need to be taken to ensure risks are adequately being addressed and, if deemed appropriate, we may exercise the use of our wider supervisory toolkit.

Yours sincerely



Sam Woods

**Deputy Governor and CEO, Prudential Regulation Authority**

## Annex A – Observations on firms’ progress in responding to SS3/19

This Annex summarises the PRA’s observations on firms’ responses to the supervisory expectations set out in SS3/19. Each section begins by setting out the PRA’s overall observations on whether firms are meeting these expectations and then highlights examples of effective and less effective practices identified. The observations set out in this Annex do not represent an exhaustive list. Smaller firms should determine how they might proportionately map to the nature, scale, and complexity of their business.

### Governance

Overall observations on whether firms are meeting our expectations

Broadly, the PRA observed that firms have made significant progress in embedding its supervisory expectations on governance for climate risks. Firms had generally been able to implement an effective level of climate governance, and had ensured that key personnel are appropriately trained to understand and manage climate risk. Some firms had generated regular climate-related management information, leaving their Executives and Boards well placed to provide effective leadership and challenge.

#### Examples of effective practice

**Board oversight** –Boards and Executives demonstrating effective practice were able to show that they understand how their firm is integrating climate considerations into their decision making across business strategies, planning, governance, and risk management processes. Within the most effective firms there was a coherent approach to climate across these four areas, which was supported by appropriate metrics and risk appetites that effectively measure vulnerabilities to climate risk. For international firms, this meant that climate-related metrics were being monitored across regions and management information was cascaded across relevant governance forums.

Other examples of effective practice included: embedding climate risk factors into strategic planning activities and senior remuneration targets; linking scenario analysis outputs to business strategies; firm-wide training to build capabilities; and continuing development of the scope, quality, and frequency of climate-related information provided to senior committees.

**Responsible Senior Manager** – The majority of firms now include an allocated Senior Manager Function (SMF) with responsibility for the financial risks from climate change. These individuals are charged with providing effective oversight of climate risks in a holistic manner, and some firms had incorporated climate-related objectives into the SMF’s remuneration. To be effective, SMFs should be able to speak to – and take appropriate ownership over – the broad institutional strategy for the financial risks from climate change.

## Risk Management

Overall observations on whether firms are meeting our expectations

In general, the PRA found that firms had made progress on risk management, but there are significant variations in the maturity of their processes and further work is required by all firms. In many cases, work is still required to finalise embedding of climate risk considerations within their RMF, RAS, committee structures, and each of the three lines of defence, utilising both qualitative and quantitative measures. Consequently, most firms' work on climate risk management and mitigation (including capital allocation) was still maturing.

### Examples of effective practice

**Risk management frameworks and tolerances** – The PRA observed that firms demonstrating effective practice had a RMF in place for climate and were implementing a well-defined, quantitative RAS, which effectively supported the firm in the identification, measurement, monitoring, management, and reporting of climate risks. In the most effective firms, the RAS was coherent with the overarching RMF, included quantitative risk limits and metrics, and was tailored to the firm's business strategy, business model, and balance sheet.

**Modelling** – As part of their RMF work, some firms exhibiting effective practice were able to demonstrate that climate risk had been appropriately factored into their quantitative analysis; for example through well-developed quantitative climate risk modelling capabilities and utilisation of prudent assumptions and proxies where data challenges existed, coupled with concurrent work to address the data gaps identified.

**Capital** – Some firms were holding capital for climate risks. The most effective firms had undertaken a methodical consideration of how climate risks could impact capital. This had allowed them to explain why they are, or are not, holding specific capital for those risks.

A number of firms demonstrated effective practice by capturing climate in their macroeconomic scenarios or using specific climate scenarios to evidence their assessment of risk.

### Examples of less effective practice

**Risk management frameworks and tolerances** – In some firms, the lack of an effective RMF for climate risks appeared to be compromising the Board and Executive's ability to effectively manage those risks. In those firms, the RMF often did not include quantitative risk appetite metrics, and there was little evidence that the RMF was impacting climate strategy or decision making. Many firms were still developing



and implementing their RAS for climate risks and, in some firms, the RAS did not include any quantitative elements.

For insurers, climate risk management for underwriting practices generally required further consideration by management and embedding into existing process.

For banks, some firms did not yet have clear timelines for incorporation of climate factors into their credit processes, and, where plans did exist, they did not always align to the bank's plans for developing data and modelling capabilities.

**Counterparties' exposures** – Data on counterparties' transition plans and on their evolving exposures to climate risks (both transition and physical risk) is needed to understand climate risks in the wholesale book. In general, banks did not have a complete picture of counterparties' exposures or transition plans, and had faced challenges in sourcing this information. Banks demonstrating effective practice had a process in train to develop their counterparty engagement processes to collect this data and then incorporate it into their risk management processes.

As analysis of climate risks progresses, some firms were considering whether they would ultimately exit particular customers or sectors and, if so, how they would manage that process in an orderly manner. In developing their thinking, they were taking into consideration the potential impact on wider market dynamics, for example, the potential need to support those sectors considered integral to the transition to net zero.

**Capital** – The PRA found that the methodologies firms had used to demonstrate that they are holding adequate capital against material climate exposures were generally maturing. In the majority of cases, firms did not provide sufficient contextual information to enable a reader to fully understand their analysis. For example, firms often provided minimal information on modelling approaches, model types, underlying assumptions, judgements, proxies, and consequent uncertainties.

## Scenario Analysis

Overall observations on whether firms are meeting our expectations  
In general, the PRA's findings indicated that scenario analysis capabilities were not sufficiently well developed to support effective decision-making. The primary constraints were in the generation, collation, cleaning, analysis, and integration of data in order to conduct decision-useful scenario analysis, with strong links to business strategy. For example, a limited number of firms were using scenario analysis to consider the impact of climate risks on future revenue projections.

Where firms were using climate risk models, the PRA generally found that they were still in the early stages of development, with some firms making use of a combination of new models, existing models and third-party solutions to estimate impacts. Of those firms, all were making use of proxies, manual adjustments, and simplifying assumptions, but there was limited information on how those data gaps and methodological challenges will be addressed.

### Examples of effective practice

**Scenario design** – The PRA observed a large degree of variability in firms' loss modelling. Firms demonstrating effective practice considered the uncertainty in their climate risk analysis, and took this into account when using the results, for example, through the use of prudent assumptions, manual adjustments or sensitivity analysis to understand how results would change should events play out in different ways.

For insurers, examples of effective practice demonstrated by some firms included an ability to model a wide range of physical vulnerabilities in their assessment of underwriting risk, and the ability to identify and address the limitations of the third-party models used.

### Examples of less effective practice

**Contextual information** – Climate scenario analysis is complex in a number of areas. This means that different frameworks and scenario calibrations are required to deliver specific outcomes. While one framework might meet one objective, it should be expected that it would not meet all objectives. For example, a fixed balance sheet exercise designed to test business model vulnerabilities over decades allows a firm to understand the risks and opportunities to its business over the specified period, but may not be an appropriate tool with which to calibrate capital. Many firms were not yet able to articulate the objectives, for which their scenario exercise had been designed, or the ways in which their approach had been calibrated to meet those objectives.

**Consistency** – The PRA observed that, in some cases, it was not clear whether firms had integrated the outputs from their scenario analysis into their ICAAP and ORSA processes, using appropriately prudent calibrations and assumptions where required. It was also unclear whether scenario analysis had been used to inform the calibration of risk appetite metrics.

**Scenario design** – In some cases, the PRA found it was not clear whether firms had taken steps to ensure that data and assumptions were consistent with the relevant scenario. Effective scenario analysis involves running scenarios that are relevant to a firm's business, and that appropriately test the firm's specific vulnerabilities. For

example, firms should consider both probabilistic events (eg changes in average weather patterns) and tail events (eg extreme weather events).

More progress is required to embed physical risk in corporate modelling. This is a particularly difficult area due to the range of impact channels, the lack of available data, and the consequent nascence of model development. The PRA found that approaches ranged from predominantly judgemental to more detailed analysis of asset loss by counterparties, with limited consideration of how physical risk would impact counterparties' supply chains and the markets, in which they operate.

Other areas where the PRA found that banks made use of simplifications were: modelling of mortgage physical risk, including by considering a wider range of vulnerabilities and extreme weather events; commercial real estate; consumer credit; and financial institutions and sovereigns. Banks need to rapidly build capability in these areas to reduce the amount of simplification within their models.

## Disclosure

Overall observations on whether firms are meeting our expectations  
While most firms had developed an approach to disclosure of climate risks, in general, the PRA found that work to be promising, reflecting its dependence on progress made in other areas of SS3/19 (eg risk management and scenario analysis). All firms will need to continue to evolve their disclosures as they develop their understanding of the climate risks relevant to their business.

In general, the PRA observed that firms' Pillar 3 disclosures and Solvency and Financial Condition Report (SFCR) disclosures were not being used as the primary means for firms to disclose their climate risks. Instead, firms were generally choosing to set out their primary climate risk disclosures in their Annual Report or a standalone climate report.

Many firms' Pillar 3 and SFCR disclosures were mainly used to report high-level summaries of governance frameworks and internal committee structures.

## Examples of effective practice

In line with Taskforce on Climate-related Financial Disclosures (TCFD) recommendations, firms demonstrating effective practice included climate disclosures in 'mainstream filings' and employed a consistent and integrated approach across all forms of annual reporting. For example, they provided consistent messaging across financial reports, standalone climate disclosures, and Pillar 3 or SFCR disclosures, with cross-referencing where required to avoid duplication and facilitate accessibility.

## Examples of less effective practice

Firms demonstrating less effective practice provided limited disclosures and / or little or no contextual information to support their climate disclosures. For example, many firms, which did not disclose material climate risks in their Pillar 3 and SFCR disclosures, provided no information to indicate why the firm's climate risks were considered to be immaterial.

## Data

Adequate climate-related data and associated data architecture are essential foundations for all of the four core areas identified in SS3/19: governance; risk management; scenario analysis; and disclosure. Reflecting this, some thematic observations are set out below.

### Overall observations on whether firms are meeting our expectations

As expected, the PRA observed that, although data is being used effectively by some firms, all firms were in need of more robust, standardised climate-related data of sufficient coverage. Most firms were reliant on third parties for data, models, and other components of risk management or were unable to obtain the relevant data.

Some firms continued to flag data gaps as obstacles to the determination of views on risks. While gaps will mean that an end-state process might not be achievable, interim approaches that utilise proxies are required.

### Examples of effective practice

**Approach to address gaps** – The PRA observed that firms demonstrating effective practice had identified their significant data gaps and were developing a strategic approach to close those gaps. They considered the requirements for reliance on third party providers<sup>8</sup> and balanced the use of those providers with strategic development of in-house capabilities over the short, medium, and longer-term. The PRA found that firms demonstrating effective practice had in place an effective system of governance to oversee and integrate the third-party data provided.

**Interim measures** – While data gaps were being addressed, firms demonstrating effective practice used appropriately conservative assumptions and proxies. Use of these estimates was documented internally and disclosed to the extent that it was

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<sup>8</sup> Firms may wish to consider SS2/21 in relation to their use of third-party data providers. (<https://www.bankofengland.co.uk/prudential-regulation/publication/2021/march/outsourcing-and-third-party-risk-management-ss>). In particular, requirements around the risk assessment detailed in paragraph 5.21 of SS2/21. Additionally paragraphs 4.4 and 14a provide detail on the governance of third party arrangements.

necessary for a reader to interpret climate publications or submissions (eg climate disclosure reports aligned with the TCFD, ORSAs, and ICAAPs).

## Annex B – Climate and accounting

The PRA found that firms were at an early stage in developing approaches to capture climate risk in balance sheet valuations. This is broadly consistent with the nature of the risks and the maturing of firms' capabilities to identify and measure the financial impact of climate risk. Firms should, however, prepare for the impact of climate risk on their accounting practices.

The PRA considers that timely incorporation of climate risk in accounting valuations is important in ensuring the safety and soundness of PRA-authorized firms.<sup>9</sup> Therefore, the PRA will continue to work with firms to share concerns, facilitate cross-industry solutions, and promote high quality implementation of accounting standards. In accordance with the PRA's Fundamental Rules and other interactions with firms, it expects firms to engage openly and cooperatively as they develop the governance, processes, and capabilities to monitor the impact of climate risk for financial reporting, including embedding robust governance, controls, and assurance over new data sources.

Planning and early action will be crucial to ensure that accounting practices and disclosures evolve in lock-step with improvements in climate risk monitoring. The PRA expects firms' financial reporting-related priorities for 2022 and beyond to include enhancing:

- a. data and modelling capabilities to quantify the impact of climate change on balance sheets and financial performance;
- b. governance and controls to support use of a higher volume of forward-looking climate-related data in financial reporting; and
- c. disclosures that help market participants understand the linkage between firms' climate-related disclosures and the impact on their financial statements and Pillar 3 reporting.

The PRA anticipates that firms' approaches to integrating climate risk into financial reporting processes will evolve for several years. This will involve replacing qualitative assessments, which may be approximate, as industry practices and quality of data improves with time. The PRA expects firms to make the resources and budgets available for several years to enable this to happen on a timely basis.

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<sup>9</sup> Although it is not the PRA's role to set, interpret or enforce accounting standards, where the application of accounting standards has an impact on our statutory objectives, we have an interest in how they are implemented.

The PRA will continue to make use of the work of external auditors in reviewing firms' climate-risk assessments. Firms' ability to provide relevant, reliable, and verifiable data about their exposure to present and future climate risks – and to ensure those data are the subject of robust controls and governance – will be crucial to support external auditors' work to substantiate the impact of climate-related risks on the financial statements.

In 2021, the PRA asked for auditors' views on the quality of the underlying data, models, and processes to support risk assessments regarding the impact of climate change on balance sheets for larger UK banks. The PRA has published its thematic feedback from this exercise,<sup>10</sup> which gives particular attention to the valuation of loans to borrowers and sectors at greater risk from climate change. Those findings were developed with the size, nature, and complexity of firms in scope particularly in mind. However, the PRA hopes these findings will be helpful for firms not in scope to prepare for the impact of climate change risk on their accounting practices.

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<sup>10</sup> October 2022: <https://www.bankofengland.co.uk/prudential-regulation/letter/2022/october/thematic-feedback-2021-2022-written-auditor-reporting>

## Annex C – Resources to assist firms in embedding the SS3/19 expectations

Since issuing SS3/19, the PRA has undertaken a number of additional exercises and issued clarifying documents. These have been designed to both assist firms to embed expectations, and understand their progress.

In addition, the PRA set up the Climate Financial Risk Forum (CFRF), which it co-chairs with the FCA. The CFRF's primary purpose is to provide guidance for industry by industry in regulatory climate matters.

Standard-setting bodies and other organisations have also published principles and guidance which firms may consider in their approach to meeting the PRA's expectations in SS3/19. These include, for banks, the BCBS principles for the effective management and supervision of climate risks, and, for insurers, the joint Sustainable Insurance Forum (SIF) and International Association of Insurance Supervisors (IAIS) paper on supervision of climate risks in the insurance sector. The Network for Greening the Financial System (NGFS) has also developed a number of resources to assist firms in gathering data and undertaking risk assessments.

Links to key documents are included below:

#	Resources
1	Supervisory Statement 3/19:  <a href="https://www.bankofengland.co.uk/prudential-regulation/publication/2019/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change-ss">https://www.bankofengland.co.uk/prudential-regulation/publication/2019/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change-ss</a>
2	Letter to CEOs of all PRA-regulated firms following up on SS3/19 (July 2020):  <a href="https://www.bankofengland.co.uk/prudential-regulation/letter/2020/managing-the-financial-risks-from-climate-change">https://www.bankofengland.co.uk/prudential-regulation/letter/2020/managing-the-financial-risks-from-climate-change</a>
3	PRA Climate Change Adaptation Report 2021:  <a href="https://www.bankofengland.co.uk/prudential-regulation/publication/2021/october/climate-change-adaptation-report-2021">https://www.bankofengland.co.uk/prudential-regulation/publication/2021/october/climate-change-adaptation-report-2021</a>
4	Results of the 2021 Climate Biennial Exploratory Scenario:



	<a href="https://www.bankofengland.co.uk/stress-testing/2022/results-of-the-2021-climate-biennial-exploratory-scenario">https://www.bankofengland.co.uk/stress-testing/2022/results-of-the-2021-climate-biennial-exploratory-scenario</a>
5	<p>Climate Financial Risk Forum guides:</p> <p><a href="https://www.bankofengland.co.uk/climate-change/climate-financial-risk-forum">https://www.bankofengland.co.uk/climate-change/climate-financial-risk-forum</a></p> <p>In particular:</p> <ul style="list-style-type: none"> <li>Climate Data and Metrics (October 2021): <a href="https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2021-data-metrics.pdf">https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2021-data-metrics.pdf</a></li> <li>Scenario Analysis (October 2021): <a href="https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2021-scenario-analysis.pdf">https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2021-scenario-analysis.pdf</a></li> </ul>
6	<p>NGFS scenarios portal, including their most recent “Phase 3” scenarios:</p> <p><a href="https://www.ngfs.net/ngfs-scenarios-portal/">https://www.ngfs.net/ngfs-scenarios-portal/</a></p>
7	<p>BCBS principles for the effective management and supervision of climate risk:</p> <p><a href="https://www.bis.org/bcbs/publ/d532.htm">https://www.bis.org/bcbs/publ/d532.htm</a></p>
8	<p>SIF/IAIS paper on the supervision of climate risks in the insurance sector:</p> <p><a href="https://www.sustainableinsuranceforum.org/publication/application-paper-on-the-supervision-of-climate-related-risks-in-the-insurance-sector/">https://www.sustainableinsuranceforum.org/publication/application-paper-on-the-supervision-of-climate-related-risks-in-the-insurance-sector/</a></p>
9	<p>PRA framework for assessing financial impacts of physical climate change:</p> <p><a href="https://www.bankofengland.co.uk/prudential-regulation/publication/2019/a-framework-for-assessing-financial-impacts-of-physical-climate-change">https://www.bankofengland.co.uk/prudential-regulation/publication/2019/a-framework-for-assessing-financial-impacts-of-physical-climate-change</a></p>
10	<p>International Actuarial Association paper on the importance of climate risks for actuaries:</p>

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	<a href="https://www.actuaries.org/iaa/IAA/Publications/Papers/Climate_Issues/IAA/Publications/Climate_Issues.aspx">https://www.actuaries.org/iaa/IAA/Publications/Papers/Climate_Issues/IAA/Publications/Climate_Issues.aspx</a>
11	Joint Forum on Actuarial Regulation paper on the science of climate change: <a href="https://www.frc.org.uk/news/june-2022-(1)/joint-forum-on-actuarial-regulation-publishes-clim">https://www.frc.org.uk/news/june-2022-(1)/joint-forum-on-actuarial-regulation-publishes-clim</a>