Bank of England PRA

Draft supervisory statement – Enhancing banks' and insurers' approaches to managing climate-related risks – Update to SS3/19

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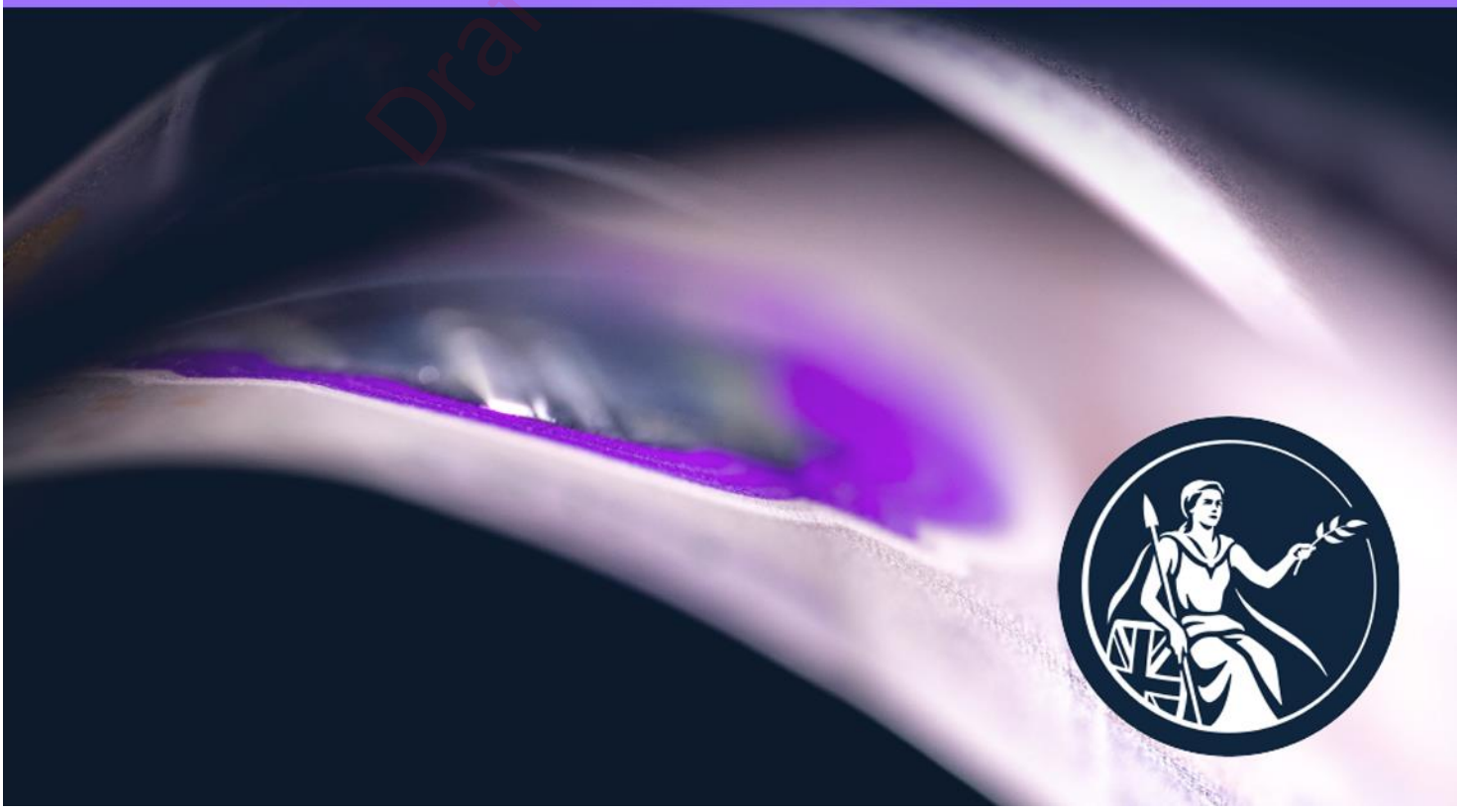
April 2025



Draft supervisory statement – Enhancing banks' and insurers' approaches to managing climate-related risks – Update to SS3/19

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Contents

1: Introduction

1.1 In April 2019, the PRA became the first prudential regulator to publish supervisory expectations for how banks and insurers should enhance their approaches to managing the financial risks from climate change (SS3/19[1]). The PRA started supervising firms against these expectations from January 2022.[2] Other prudential regulators followed suit since then and supervision of climate-related risk management is now a norm among prudential regulators.[3]

1.2 In recent years, the PRA has provided feedback on firms' progress and examples of effective practice in a number of different documents including: two 'Dear CEO' letters,[4,5] three 'Dear CFO' letters,[6,7,8] the 2021 and 2025 PRA Climate Change Adaptation Reports ('CCAR')[9,10], and the Report on Climate-related Risks and the Regulatory Capital Frameworks.[11] Through the thematic reviews of firms and regular supervisory engagement work underpinning these publications, the PRA has improved its understanding of the financial and operational resilience risks firms face from climate change ('climate-related risks').

1.3 New international guidance relevant to the supervision of climate-related risks has also been issued since the PRA published SS3/19. These have included the Basel Committee on Banking Supervision's (BCBS) Principles for the effective management and supervision of climate-related financial risks,[12] as well as the latest developments in standards and guidance

1 December 2024: **www.bankofengland.co.uk/prudential-regulation/publication/2019/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change-ss**.
2 Ibid.
3 EU: **www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr201127~5642b6e68d.en.html**.
Singapore: **www.mas.gov.sg/regulation/guidelines/guidelines-on-environmental-risk-management**.
US: **www.federalreserve.gov/supervisionreg/srletters/SR2309.htm**.
4 July 2020: **www.bankofengland.co.uk/prudential-regulation/letter/2020/managing-the-financial-risks-from-climate-change**.
5 October 2022: **www.bankofengland.co.uk/prudential-regulation/letter/2022/october/managing-climate-related-financial-risks**.
6 October 2022: **www.bankofengland.co.uk/prudential-regulation/letter/2022/october/thematic-feedback-2021-2022-written-auditor-reporting**.
7 September 2023: **www.bankofengland.co.uk/prudential-regulation/letter/2023/thematic-feedback-2022-2023-written-auditor-reporting**.
8 September 2024: **www.bankofengland.co.uk/prudential-regulation/letter/2024/thematic-feedback-on-accounting-for-ifrs-9-ecl-and-climate-risk**.
9 October 2021: **www.bankofengland.co.uk/prudential-regulation/publication/2021/october/climate-change-adaptation-report-2021**.
10 January 2025: **www.bankofengland.co.uk/prudential-regulation/publication/2025/january/pra-climate-change-adaptation-report-2025**.
11 March 2023: **www.bankofengland.co.uk/prudential-regulation/publication/2023/report-on-climate-related-risks-and-the-regulatory-capital-frameworks**.
12 **www.bis.org/bcbs/publ/d532.htm**.

supporting the Insurance Core Principles (ICPs)[13] published by the International Association of Insurance Supervisors (IAIS) and the advice provided in its 2021 Application Paper.[14]

1.4 Since the PRA first set expectations for firms on the management of climate-related risks in 2019, firms have taken concrete steps to build their risk management capabilities. However, the level of understanding of climate-related risks is varied and the development of leading practice in the effective management of these risks is challenging and continues to evolve. Firms have provided feedback that greater clarity on what the PRA expects firms to do to manage the effects of climate change would be welcome.

1.5 This supervisory statement (SS) provides an updated set of expectations that consolidates PRA feedback, reflects new international standards and embeds improved understanding of climate-related risks. It is intended to support firms in managing climate-related risks in a proportionate way, thereby furthering the PRA's primary and secondary objectives.

1.6 This SS is relevant to all UK insurance and reinsurance firms and groups, ie those within the scope of Solvency II including the Society of Lloyd's and managing agents (Solvency II firms) and non-Solvency II firms (collectively referred to as 'insurers'), banks, building societies, and PRA-designated investment firms (hereinafter referred to as 'banks'). 'Firms' will be used to refer to both insurers and banks. The expectations do not apply to branches.

1.7 The SS is set out as follows.

- Section 2 describes the ways through which climate-related risks can arise for firms and the distinctive elements of climate-related risk which, when considered together, present unique challenges and require a strategic approach.
- Section 3 provides guidance on implementation of this SS, including expectations around the evolution of the understanding and measurement of climate-related risks by firms. It also explains the PRA's approach to proportionate application of the expectations.
- Section 4 sets out the updated PRA expectations in seven chapters. Five chapters (Chapters 1–5) are applicable to all firms, one is specific to banks (Chapter 6) and one to insurers (Chapter 7):
    - Chapter 1: Governance
    - Chapter 2: Risk Management
    - Chapter 3: Climate Scenario Analysis
    - Chapter 4: Data
    - Chapter 5: Disclosures
    - Chapter 6: Banking-specific issues

13 **www.iais.org/activities-topics/standard-setting/icps-and-comframe**.

14 21 May 2021: **www.iais.org/publications/application-papers**.

- Chapter 7: Insurance-specific issues

2: How climate-related risks affect firms

2.1 The financial and operational resilience risks to firms from climate change (climate-related risks) arise through two primary channels: physical risks and transition risks.

2.2 Physical risks arise from a number of factors and can be related to specific weather events (such as heat waves, floods, wildfires and storms) and longer-term shifts in climate (such as changes in precipitation and extreme weather variability, sea level rise and rising mean temperatures).

2.3 Physical risks may impact firms as a result of natural catastrophes and may have wider impacts related to disruption to supply chains and trade insurance. Their impact will be exacerbated when events overcome existing defences and adaptive measures.

2.4 Transition risks can arise from the process of adjustment towards climate change, including changes to enable a net-zero emissions economy. These adjustments include technological innovations, policy decisions and market changes. For example, as a result of adjustment to climate change, the UK motor vehicle manufacturing industry has had to respond to an increase in consumer demand for low-emission cars,[15] as well as UK Government policies such as the zero-emission vehicle mandate. Transition changes can prompt a reassessment of the value of a large range of assets and lead to changes in credit risk for firms.

2.5 Climate-related litigation can also affect the value of companies, including those that have failed to mitigate, adapt or disclose climate-related risks. Parties who have suffered losses from the effects of climate change may seek compensation from those they hold responsible. Those who pay the compensation may in turn seek to offset their financial loss by claiming from an insurer.

Distinctive elements of climate-related risks

2.6 Climate-related risks for firms have three distinctive elements which, when considered together, present unique challenges and require a strategic management approach:

- **The risks are systemic.** To varying extents, they will affect every customer, every company, in all sectors of the economy and across all geographies. Their impact will likely be correlated, non-linear, irreversible and subject to tipping points. Over time, they are likely to occur on a greater scale than other risks that firms are used to modelling and managing.

15 Battery electric cars accounted for 16% of all new car registrations in 2023, an increase from 1% in 2018.

- **The risks are simultaneously uncertain in scale and timing and yet foreseeable.** The exact combination of physical and transition risks that will emerge is uncertain, but either current emissions pathways will continue (or worsen) and result in greater physical risks or the pathways will improve as a result of reducing emissions, likely resulting in greater transition risks.

- **The size and distribution of the future risks will be determined by actions taken now.** Once physical risks begin to manifest in a systemic way, it will already be too late to reverse many effects through emissions reductions. Similarly, the longer that meaningful adjustment to a lower emissions path is delayed, the more disruptive a transition is likely to be.

3: Implementation

3.1 This SS commences on [date]. Upon commencement of this SS, it replaces SS3/19 in its entirety.

3.2 The PRA expects firms to carry out an internal review of their current status in meeting the expectations set out in this SS. As part of this, firms should identify the expectations that require further work to meet and plan for how they will address any gaps (including through interim actions).

3.3 To give firms time to transition from SS3/19, supervisors will not ask for evidence of internal assessments, gap analyses, action plans and other steps taken to meet the updated expectations until a period of 6 months has elapsed from the commencement of the SS.

3.4 During and after this 6-month period, firms should continue to ensure they appropriately manage climate-related risks and engage with any ongoing PRA core assurance meetings or requests.

3.5 Firms should regularly review, and where necessary update, their internal risk assessments and proposed climate actions. Firms should be in a position to demonstrate, as part of supervisory dialogue with the PRA, that steps taken, proposed or in train are appropriate and any actions are up to date.

Evolution of climate-related risk measurement and understanding

3.6 All firms are potentially exposed to climate-related risks. The PRA expects firms to take a forward-looking, strategic and ambitious approach to implementing the expectations in this SS on an ongoing basis, as understanding, capabilities and tools develop.

3.7 The PRA expects firms to keep pace with the evolution of knowledge and capabilities relating to the measurement and management of climate-related risks in meeting the expectations outlined in this SS. As collective understanding of climate-related risks, data, tools and best practice evolves, firms are expected to refine and innovate their approach to better integrate climate-related risk management across their organisation.

3.8 While the PRA expects firms to be innovative in integrating climate-related risks into their risk management frameworks, it expects firms to utilise existing tools and risk management techniques commonly used for other risk types.

Proportionate application of expectations

3.9 The PRA expects a firm's risk management response to be proportionate to the potential impact of climate change on its PRA-regulated activities. The expectations in this SS should be considered in the context of the PRA's Approach to Banking and Insurance[16] which sets out the PRA's approach to proportionality and lower impact firms. In considering the appropriate response to managing climate-related risks, firms should therefore consider the following two step process to ensure that a firm's approach to climate-related risk management appropriately reflects the materiality of the climate-related risks it faces.

Step 1 – Risk identification, assessment and sign-off

3.10 Under the risk identification and assessment approach (see paragraphs 4.2.1–4.2.5), firms are expected to identify the material climate-related risks they are exposed to and understand how these risks will impact the resilience of their business model over relevant time horizons and under different climate scenarios.

3.11 The risk identification and assessment process should be supported by relevant scenario analysis that reflects, for example, the impact on the current balance sheet, the evolution of the balance sheet and future business model viability (see paragraph 4.3.8). Such scenario analysis should also include reverse stress testing (see paragraph 4.3.11). Firms may opt to use less sophisticated approaches to scenario analysis, including the use of narrative scenarios quantified with expert judgement (see paragraph 4.3.13). When using these less sophisticated approaches, the PRA expects firms to ensure the approach taken is appropriate to ensure effective assessment of any material climate-related risks, and to reflect the limitations of the chosen approaches and tools.

3.12 The firm's board should review and agree the material climate-related risks identified in this process and record them in the risk register along with an agreed timeline for future board review (see paragraph 4.1.8).

Step 2 – Appropriate risk management tools and response

3.13 The risk management response that a firm adopts should be proportionate to its assessed climate-related risk profile (see paragraphs 4.2.13–4.2.26), reflecting the vulnerability of a firm's business model to climate-related risk.

3.14 Where a firm has determined that there is a less material impact of climate-related risks on its business model, it may choose to scale its risk management response accordingly such as using less sophisticated tools and less granular data proxies, provided the firm is aware of the limitations of those tools and makes a prudent interpretation of the information produced when informing decision-making. The necessity and expectation for firms to use

16 Set out in the PRA's Supervisory Approach to Banking and Insurance, Section 5: **www.bankofengland.co.uk/prudential-regulation/publication/pras-approach-to-supervision-of-the-banking-and-insurance-sectors**.

more sophisticated risk management tools will increase as the magnitude and likelihood of material risks to which they are exposed increases.

3.15 In line with paragraph 3.7, firms should remain vigilant to the likelihood of increase in the proximity and scale of climate-related risks and continue to develop their risk management capabilities accordingly.

4: Supervisory expectations

Chapter 1: Governance[17]

Provision of climate-related risk analysis to the board

4.1.1 The PRA expects a firm's board to understand the impacts of climate-related risks on the firm's business over various time horizons and under different climate scenarios, and to be able to address these risks effectively within the firm's overall business strategy and risk appetite. In doing so, the board will look to the management body, including the relevant Senior Management Function (SMF) holder or other senior individual appointed for this purpose (see paragraph 4.1.14). The management body should be able to demonstrate to the board how the firms' business strategy responds to climate-related risks to its business model.

4.1.2 Firms should have processes for identifying and assessing the impacts of transition and physical risks that can impact the firm's business model over the short, medium and long term (see paragraph 4.2.1–4.2.5).

4.1.3 Firms should consider the appropriate time horizons for impact analysis by considering:

- the impact of market expectations of future events on asset values;
- the maturities and holding periods of financial instruments that the firm either holds or expects to hold;
- business model adaptation timescales;
- counterparty refinancing risks; and
- the expected run-off of insurance liabilities.

4.1.4 Reflecting the rapidly evolving nature of both climate-related risks and the tools used to manage such risk, the board should ensure mechanisms are put in place for the periodic review[18] of the firm's strategy for addressing climate-related risks, its risk appetite and risk management practices.

Business strategy

4.1.5 The board should be provided with an analysis of the financial performance of the firm's business strategy under a range of climate scenarios (see Climate Scenario Analysis chapter). This analysis should identify future revenue and profit at risk, expected changes in operating costs and potential trigger points for strategic change. The rationale for the range

17 March 2016: www.bankofengland.co.uk/prudential-regulation/publication/2016/corporate-governance-board-responsibilities-ss.

18 Frequency of the review to be determined by the climate-related risks the firm is exposed to, firm's business model and the geographical concentration of its balance sheet.

of scenarios selected should be clearly defined, with reference to the climate-related risks identified in the firm risk register (see paragraph 4.2.2) and agreed by the board.

4.1.6 Some firms have adopted climate goals or targets, such as adaptation or greenhouse gas reduction targets.[19] Implementing those goals may involve business transformation, a change in the makeup and risk profile of the balance sheet, and may create public expectations through disclosures of future action. Where a firm adopts goals or targets, the firm should be able to demonstrate, upon request, how its plan to meet those goals and targets, including the assumptions underpinning these plans, are integrated into a firm's overall strategy. Any risks associated with relevant business transformation, or as a consequence of missing targets, should be assessed and reflected in risk management.

4.1.7 When determining business strategy and/or delivery of climate goals, firms should consider the relevance for their business model of national climate policies including, where applicable or where they choose to adopt these, national climate targets such as the UK Government target to reduce greenhouse gas emissions by at least 100% of 1990 levels by 2050.[20]

Risk appetite

4.1.8 The PRA expects the board to review and agree the material climate-related risks identified in the risk register (see paragraph 4.2.2) periodically. The board should agree and approve the climate-specific risk appetite statements for these risks. A timeline for the board to review this assessment of risk on an ongoing basis should be determined and agreed. It should also include a set of trigger criteria, which, if met, would require an earlier review of this determination than the set timeline.

4.1.9 The PRA expects firms to define a risk appetite hierarchy. Firms should set firm-wide risk appetite at the board level and business line risk appetite should reflect material risks identified for each business line. Adherence to risk appetites should be supported by quantitative risk metrics and limits (see paragraph 4.2.14–4.2.19).

4.1.10 The PRA expects firms to establish a two-way feedback process between firm-wide and business line risk appetite to ensure they are consistent and to identify any necessary adjustments.

4.1.11 The risk appetite statements should categorise risks by level of risk appetite. For example, one possible way a firm might classify its level of appetite is as follows:

- ACCEPT – a risk present in the risk register hierarchy, which a firm decides to take on and not manage with climate specific limits.

19 The PRA does not require firms to adopt climate goals, for example net zero emission targets or adaptation goals. However, the PRA recognises that some firms have voluntarily adopted climate goals, and others operate in jurisdictions that have set national climate targets or where jurisdictions require firms operating in that jurisdiction to adopt specific climate goals or align their business to specific climate goals.

20 **www.legislation.gov.uk/ukpga/2008/27/contents**.

- MANAGE – a risk present in the risk register hierarchy and monitored and managed through appropriate climate specific metrics and limits (see paragraphs 4.2.14–4.2.19).
- AVOID – a risk a firm decides to avoid, supported by appropriate exclusion policies.

Firms might wish to include additional qualitative detail in their risk appetite statements. For example, they might segregate managed risks into those that they have a preference to hold versus those they seek to avoid, to the extent possible within their established business model. When new exclusion policies are introduced, a hybrid appetite such as MANAGE AND AVOID GOING FORWARD might be appropriate.

4.1.12 The board's understanding of the setting of risk appetite metrics and limits should be informed by an analysis of the losses associated with a range of climate stress scenarios. The scenario analysis should consider the impact on the current balance sheet, the evolution of the balance sheet and future business model viability, including through the use of reverse stress testing (see paragraph 4.3.11).

Corporate governance structures[21]

4.1.13 The PRA expects firms to define and assign responsibilities for the board, its relevant sub-committees, and the management body in managing climate-related risks.

4.1.14 The board and the management body should allocate individual responsibility for identifying and managing climate-related risks at an appropriate level of seniority, such as to a relevant existing SMF, and reflect that in the SMF holder's statement of responsibilities or other appointment terms.[22,23] The individual assigned should play a key role in implementing the firm's strategy in response to climate-related risks and ensuring the board has the appropriate information to facilitate decision-making. The board should ensure the appropriateness of climate-related risk objectives for the SMF holder and that performance against the objectives is reflected appropriately through the firm's appraisal and reward system eg in variable remuneration.

4.1.15 The PRA expects boards to allocate sufficient time to the consideration of, and to have an adequate understanding of, climate-related risks. Boards should have the appropriate skills and experience to ensure that the management body has addressed the risks effectively and to challenge where appropriate. The board should ensure that appropriate

21 General Organisational Requirements Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/general-organisational-requirements**.
22 December 2021: **www.bankofengland.co.uk/prudential-regulation/publication/2015/strengthening-individual-accountability-in-banking-ss**.
23 August 2015: **www.bankofengland.co.uk/prudential-regulation/publication/2015/strengthening-individual-accountability-in-insurance-ss**.

resources are allocated to the management of all material climate-related risks identified in the firm risk register (see paragraph 4.2.2).[24]

4.1.16 The board should also set the appetite and tolerance levels for outsourcing and third-party arrangements[25] that may be exposed to climate-related risks or introduce climate-related risks to the firm through their activities eg reputational risk. The board should understand the firm's reliance on these arrangements and ensure that the firm has appropriate and effective risk management systems and strategies in place to deal with these arrangements.[26]

4.1.17 Climate-related risks should also be incorporated into internal control frameworks across the firm's three lines of defence.

Chapter 2: Risk Management

Risk identification and assessment[27,28]

4.2.1 The PRA expects firms to regularly carry out risk assessments to identify the material climate-related risks the firm is exposed to. Firms should understand how the risks will affect the resilience of their business model over relevant time horizons and under different climate scenarios (see paragraphs 4.1.1–4.1.3).

4.2.2 To ensure that the approach to risk identification and assessment is appropriately structured, firms should consider the following non-exhaustive steps as part of the assessment:

- **Identification of risk transmission channels:** assess the transmission channels[29] through which physical and transition risks impact firms' risk types (eg market, credit, liquidity, operational risk and resilience, as well as underwriting, reserving, reputation) and future revenue and profitability. The granularity with which transmission channels are considered should reflect the firm's business and risk profile. For example, a mortgage lender might consider how the impact of climate change on flood risk might affect credit losses due to the cost of property damage and the associated impact on property values (see Chapters 6 and 7 for examples of transmission channel and financial risk type combinations applicable to banks and insurers).

24 Paragraph 2.7(1) of the Risk Control Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/risk-control/16-08-2024**.

25 March 2021: **SS2/21 – Outsourcing and third party risk management** defines 'third party' as 'an organisation that has entered into a business relationship or contract with a firm to provide a product or service'.

26 March 2021: **SS2/21 – Outsourcing and third party risk management**.

27 Paragraph 3.1 of the Conditions Governing Business Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/conditions-governing-business/22-08-2024**.

28 Paragraphs 2.1A and 3.4(2) of the Risk Control Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/risk-control/24-05-2024**.

29 Key transmission channels relevant to financial firms are set out in October 2021: **https://www.bankofengland.co.uk/prudential-regulation/publication/2021/october/climate-change-adaptation-report-2021**.

- **Risk assessment**: determine which combinations of transmission channel and risk type materially impact the firm as a whole, identify which business lines are affected, and consider whether the impact is expected in the short or long-term (ie, risk imminence).
- **Risk register:** include all material risks in the firm risk register and agree this at the board (see paragraph 4.1.8). Each entry in the firm risk register should be linked to an existing risk type and the transmission channel should be clearly articulated. Firms should also provide risk categorisation (ie, risks that the firm wishes to accept, manage or avoid (see paragraph 4.1.11) and risk imminence). Firms might also consider using a combination of financial risk type, climate-related risk transmission channel and business line to structure the climate entries within their register.

In line with the approach to proportionality (see paragraph 3.9–3.15), firms can exercise judgement in assessing the materiality of risks. However, firms should explain how the judgement on risk materiality was made, including for those risks deemed immaterial, in their Internal Capital Adequacy Assessment Processes (ICAAPs) and own risk and solvency assessments (ORSAs) (see paragraphs 4.6.19–4.6.20 and 4.7.8–4.7.12). Firms should provide sufficient detail of their methodologies, underlying assumptions, data and proxies, and associated governance framework, to allow for effective challenge.

4.2.3 Firms should also consider whether their assessment of risk materiality is appropriate for the calculation of regulatory capital and liquidity requirements (see paragraph 4.6.19–4.6.20, 4.6.21–4.6.22, 4.7.8–7.12) and expand their list of material risks for regulatory purposes as required.

4.2.4 As some climate-related risks are already materialising and the risks are expected to grow over time,[30,31] firm risk identification and assessment should be subject to periodic review to ensure that the assessment of materiality is up to date and based on the latest scientific evidence, and that no material risks go unrecognised. In addition, firms should consider going beyond using only historical data to inform their risk identification and assessment and include forward-looking tools such as scenario analysis and stress testing as appropriate (see Chapter 3: Climate Scenario Analysis).

4.2.5 Outcomes of the risk identification and assessment process and the resulting risk register should be reported to the board responsible for setting enterprise-wide risk appetite (see paragraph 4.1.8) and firms should ensure that all enterprise-wide material risks are appropriately captured in risk appetite statements (see paragraphs 4.1.8–4.1.10). Business line specific material risks should be considered by business line management and their independent risk management functions and reflected in business line risk appetite statements, where relevant (see paragraphs 4.1.9–4.1.10).

30 **www.ipcc.ch/report/sixth-assessment-report-cycle**.

31 October 2021: **www.bankofengland.co.uk/prudential-regulation/publication/2021/october/climate-change-adaptation-report-2021**.

Client, counterparty, investee and policyholder risk identification and risk assessment

4.2.6 To inform their risk identification and assessment, the PRA expects firms to understand the risks arising from relationships with clients, counterparties, investees and policyholders and to identify those relationships that have a material impact on their climate-related risk profile ('material relationships'). This will include the credit risk associated with lending and re-insurance activities, the market risk associated with holding securities and the reputational or litigation risk introduced by all relationships.

4.2.7 Firms should develop an understanding of the climate-related risks relating to their exposures to specific geographic regions and sectors. These assessments should form the basis for the assessments performed for material individual relationships.

4.2.8 Firms should clearly define and document the materiality criteria (see paragraph 4.2.2) that determine which relationships are subject to an individual assessment that explores idiosyncratic risks. These criteria should also be in line with the approach to proportionality (see paragraphs 3.9–3.15).

4.2.9 Firms should develop consistent risk assessments across material relationships with clients, counterparties, investees and policyholders. These risk assessments should be structured to provide a common assessment across the firm with clear guidelines for assessors supported by appropriate analysis. The assessments should consider (but are not limited to) the elements below, as appropriate:

- exposure of the client, counterparty, investee and policyholder's sector(s) to transition risk;
- exposure of the client, counterparty, investee and policyholder's operations to physical risks;
- the client, counterparty, investee and policyholder's plans to reduce greenhouse gas emissions including the vulnerability to transition risks of the sector in which the client, counterparty, investee and policyholder operates, the credibility of the client, counterparty, investee and policyholder's transition plan and its positioning versus competitors;
- the client, counterparty, investee and policyholder's plans to adapt to future climate change including the direct exposure of the counterparty's operations, the vulnerability of its supply chain, the impact on its markets, the credibility of the plan and its positioning versus competitors;
- how access to required funding impacts the client, counterparty, investee and policyholder's ability to transition or adapt its business;
- how the degree of reliance on emerging technologies impacts the credibility of a client, counterparty, investee and policyholder's transition and adaptation plans;
- the degree of alignment between the client, counterparty, investee and policyholder's transition plans and transition scenarios on which the firm's own transition plans are based; and
- liability, litigation and reputational risk arising from the relationships.

4.2.10 The role of climate-related risk assessments of client, counterparty, investee and policyholders in decision-making should be clearly defined. For example, risk scoring might be used to limit client, counterparty, investee and policyholder exposures and transaction sizes, or to exit relationships.

4.2.11 Firms should consider how the outcomes of client, counterparty, investee, and policyholder risk assessments interact with the risks identified in the firm risk register and ensure that interactions and potential amplification channels are reflected appropriately.

4.2.12 Where data gaps exist, firms should have a plan for assessing the materiality of those gaps, for addressing them and for managing the associated risks (see paragraphs 4.4.1–4.4.3). Where firms do not have the necessary information from clients, counterparties, investees and policyholders, and where this information is considered material to a firm's own risks, firms should seek to obtain this information where possible (eg during client onboarding or annual reviews). Firms could also consider using data from publicly available sources, working together with external experts to collect (asset-level) data (see paragraph 4.4.4) or using data proxies (see paragraph 4.4.3). Client, counterparty, investee and policyholder engagement strategies could outline how firms deal with challenges related to data collection.

Risk measurement and monitoring

4.2.13 Firms should consider all material risks and their categorisation within their risk register. Where firms have chosen to use a categorisation such as ACCEPT, MANAGE, AVOID (see paragraph 4.1.11):

- for risks they intend to avoid, firms should adapt/develop suitable business exclusion policies; and
- for risks they intend to manage, firms should develop a range of quantitative risk appetite metrics and limits relevant for their business model to monitor their exposure to material climate-related risks, to assess whether they are within their set risk appetite and to monitor progress against their climate-related risk strategy over time.

Development of metrics and limits

4.2.14 When developing quantitative metrics and limits, firms should consider factors including, but not limited to:

- the relevant time horizons (see paragraph 4.1.3)
- the range and granularity of metrics and limits necessary to monitor their exposure to climate-related risks (see paragraph 4.2.16); and
- The role of model and data uncertainty in the interpretation of the metrics and limits employed (see paragraph 4.2.19).

4.2.15 When considering the appropriate range and granularity of metrics used, the PRA expects firms to consider, in line with the approach to proportionality (see paragraph 3.9-3.15):

- the potential impact of climate change on the firm's business model, reflecting the nature, scale and complexity of its business, both as it is currently and as it may develop in the future; and
- the level of understanding of climate-related risks that impact the firm's business model (ie firms with limited understanding might use less granular but more conservative metrics and limits).

4.2.16 In developing more granular metrics and limits, firms should consider the evolving nature of climate-related risks and their vulnerability to these risks, eg by including more advanced client/counterparty/investee/policyholder risk assessments (see paragraphs 4.2.6–4.2.12) that consider individual exposures.

4.2.17 In line with the approach to proportionality set out in paragraphs 3.9–3.15, firms should consider the use of results of scenario analysis and reverse stress testing to better understand the risks they consider within appetite and to set appropriate risk metrics and limits (see paragraphs 4.3.8 and 4.3.11).

4.2.18 The metrics and limits should be monitored and subject to periodic review (see paragraph 4.1.4) by the firm and updated as necessary reflecting the developing understanding and best practice within firms and the rapidly evolving nature of climate-related risks and the tools to manage these risks. Firms should develop triggers/early warning indicators to review their climate-related risk strategy, and/or their risk appetite.

4.2.19 The PRA recognises that there are areas where data, models or risk measurement tools are not yet adequate to measure risks accurately or to calculate reliable metrics. In such cases, the PRA expects firms to use appropriately conservative proxies and assumptions to estimate these risks and not leave any material risks unrecognised (see paragraph 4.4.3). Where model or data uncertainty is material (see paragraphs 4.4.1–4.4.2), firms should perform sensitivity analysis for the impacted metrics and consider the results when defining their risk appetite.

Internal risk reporting[32]

4.2.20 The PRA expects the management body to provide the board and its relevant sub-committees with timely information on their exposure to and mitigation of material climate-related risks to enable them to discuss, challenge and make decisions relating to the firm's

32 Paragraph 3.2 of the Risk Control Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/risk-control**.

management of these risks and its climate-related risk strategy (see paragraphs 4.1.5–4.1.7).[33]

4.2.21 Firms should implement an appropriate internal climate-related risk reporting infrastructure, if not already in place for the internal reporting of other risks, that will allow for regular, periodic reporting as well as ad-hoc reporting (eg in cases where a risk appetite limit for a certain material risk is breached, and/or a review of risk appetite appropriateness is necessary).

4.2.22 Firms should ensure that the frequency of reporting and engagement with the board and its relevant sub-committees is appropriate to the materiality of climate-related risks to the firm's business model. This should be in line with the approach to proportionality (see paragraphs 3.9–3.15) and in line with the frequency of reporting for other risks of similar materiality. For example, a mortgage lender with significant exposures to properties in high flood risk areas would be expected to provide management information at a higher frequency than a firm with no material climate impacted exposure.

4.2.23 Regular management information and reporting of exposures to climate-related risks should include, as appropriate:

- utilisation of risk appetite limits and any unexpected changes in the utilisation;
- changes to the firm risk register (ie identification of new material risks, and/or material risks becoming immaterial);
- analysis of climate events, the financial impact on the firm and their broader economic impact, as they arise;
- interaction of climate and non-climate events; and
- use of reverse stress tests to understand how risks that firms consider within risk appetite are evolving.

Operational resilience[34]

4.2.24 Changing climate conditions can give rise to risks to firms' operational resilience. For instance, they can have direct and indirect impacts on a firm's business continuity contingency planning and disaster recovery, infrastructure (both in the UK and globally), operations and their outsourcing and third-party arrangements (see paragraph 4.1.16).

4.2.25 Firms should assess the impact of climate-related risk drivers from the perspective of both their general operations and their ability to continue providing critical operations, including those provided through outsourcing and third-party arrangements, in severe but plausible scenarios. Firms should also ensure that climate-related risk drivers, where material, are incorporated into their business continuity and contingency planning.

33 Paragraph 5.7 of the General Organisational Requirements Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/general-organisational-requirements**.

34 Operational Resilience Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/operational-resilience/10-12-2024**.

4.2.26 Firms should be aware of, and have suitable means in place to assess, the extent to which their operational resilience may be negatively impacted by changes in physical climate-related risk. The PRA considers firms to be operationally resilient if they can prevent disruption occurring to the extent practicable; adapt systems and processes to continue to provide services and functions in the event of an incident; return to normal running promptly when a disruption is over; and learn and evolve from both incidents and near misses. Disruptions may include, but not be limited to, natural hazards, damage to the firm's physical infrastructure, and disruption to its energy supply or that of its material third-party service providers. The frequency and severity of such disruptions are likely to be a function of changes in the climate.

Chapter 3: Climate Scenario Analysis

Role of scenario analysis

4.3.1 The PRA expects firms to conduct climate scenario analysis (CSA) to enable the assessment of the impact of climate change and climate-related risks (see paragraph 4.1.1). CSA should have clear objectives[35] with the rationale for the range of selected scenarios clearly defined and agreed by the board (see paragraph 4.1.5). Firms should adequately document and demonstrate the objectives of their exercises, how their scenario selection fulfils these objectives[36] and how the results inform their decision-making (see paragraph 4.3.21).[37] Reflecting the unique characteristics of climate-related risks (see paragraph 2.6), it is not possible to rely on historic data series and experience available for other risks. CSA is therefore a key tool to enable firms to identify, quantify and manage climate-related risks and this chapter details the PRA's expectations relevant to all firms. However, firms should match their scenario analysis capabilities with the potential impact of climate change on their PRA-regulated activities and business model, in line with the approach to proportionality set out in paragraph 3.9-3.15, by using, for example, a mix of simpler narrative based scenarios and more mathematical approaches to best inform decision-making.

4.3.2 CSA supplements standard scenario analysis and stress testing toolkits[38][39] to account for the distinctive characteristics of climate-related risks (see paragraph 2.6). Firms should

35 BCBS TFCR DP: The role of climate scenario analysis in strengthening the management and supervision of climate-related financial risks: **www.bis.org/bcbs/publ/d572.htm**.

36 **www.ngfs.net/en/publications-and-statistics/publications/ngfs-scenarios-purpose-use-cases-and-guidance-where-institutional-adaptations-are-required**.

37 October 2022: **www.bankofengland.co.uk/prudential-regulation/letter/2022/october/managing-climate-related-financial-risks** notes: '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.'

38 July 2015 SS31/15 ICAAP and SREP, Chapter 3: **www.bankofengland.co.uk/prudential-regulation/publication/2013/the-internal-capital-adequacy-assessment-process-and-supervisory-review-ss**.

39 November 2016: SS19/16 Solvency II ORSA, Chapter 8: **www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2016/ss1916**.

consider climate-related impacts under a range of plausible future outcomes relevant to the firm's business model and risk appetite, including 'central case' scenarios that are considered the most likely outcome.

4.3.3 CSA should seek to capture all material climate-related risks that are relevant to the firm's business model, including risks that have been identified as relevant, but where the degree of materiality is yet to be determined. This is in line with the approach to proportionality (see paragraphs 3.9-3.15), and expectations on risk identification and assessment processes (see paragraph 4.2.2).

4.3.4. The PRA expects firms to use conceptually sound models and toolkits in their CSA supported by relevant published scientific, technological, and economic research.[40] Reflecting the ongoing progress in those fields, firms should be able to justify the selection of the sources they relied on.[41] Firms should be aware of the limitations of the climate scenarios and models they use, which may not capture the full range and scale of climate-related risks, such as non-linearities and potential tipping points,[42] and they should account for these limitations in their use of the results (see paragraph 4.3.18).

Scenario selection and use cases

4.3.5 The PRA expects firms to select and match scenarios, their time horizons, frequency and balance sheet assumptions to use cases in line with their identified CSA objectives (see paragraph 4.3.1). Firms should recognise that they will likely need to conduct multiple CSA exercises for different objectives. At a minimum this would involve assessing the potential impacts of a plausible future climate scenario on the firm's business model and risk exposure alongside conducting a reverse stress test (see paragraph 4.3.11).

4.3.6 Scenario selection should be relevant to the risk profile of the firm and the positioning of chosen scenarios in the distribution of potential outcomes should match their respective use cases. For example, firms should adjust the intensity of scenarios[43] where a firm's objective is to assess severe but plausible stress scenarios. Scenarios should explore a range of plausible future outcomes and include materialisation of different combinations of transition risk outcomes and levels of physical risk impacts.

4.3.7 Firms should include a scenario consistent with climate targets applicable in the jurisdictions relevant for the firm's exposures, where such targets exist. For the assessment of physical risks, which over the longer term will be affected by the level of global emission

40 May 2023: SS1/23, Principle 3.1: **www.bankofengland.co.uk/prudential-regulation/publication/2023/may/model-risk-management-principles-for-banks-ss**.

41 Credible sources of evidence could include, for example, international scientific bodies such as the Intergovernmental Panel on Climate Change (IPCC), established climate and weather forecasters such as the Met Office or the National Oceanic and Atmospheric Administration (NOAA), the International Energy Agency (IEA) and independent advisory bodies such as the Climate Change Committee (CCC).

42 NGFS scenarios: **www.ngfs.net/en/publications-and-statistics/publications/ngfs-scenarios-purpose-use-cases-and-guidance-where-institutional-adaptations-are-required**.

43 See source in footnote 42.

reduction efforts, firms should also, as appropriate, include scenarios reflecting international climate change mitigation commitments.

4.3.8 Firms' CSA should inform business decision-making and help firms to understand the impact of climate-related risks on their solvency, liquidity, and, for insurers, their ability to pay out claims to policyholders.[44],[45] Firms should calibrate their scenarios, including the severity, time horizons and frequency (see Table 1 and paragraphs 4.3.9 and 4.3.10), accordingly. In line with the approach to proportionality (see paragraphs 3.9–3.15), firms should use CSA to inform their:

- **Business strategy:** firms should assess the impact on the business strategy over relevant time horizons and under a range of climate scenarios and associated management responses (see paragraphs 4.1.3 and 4.3.23). Firms should assess impacts on their future revenues and profitability under relevant 'central case' scenarios (see paragraph 4.3.2) to evaluate the build-up of risks over time and identify triggers for strategic change.
- **Risk management:** Firms should use CSA for identification and assessment of material climate-related risks (see paragraphs 4.2.2–4.2.5), in particular assessing the resilience and vulnerabilities of the firm's business model to a range of climate scenarios, including severe but plausible outcomes. CSA should also be used for reverse stress testing (see paragraph 4.3.11) as part of the ICAAP and ORSA,[46] to support risk appetite setting and development of loss limits (see paragraphs 4.1.11 and 4.2.14–4.2.19).
- **Capital setting:** Scenario analysis is a key tool that the PRA expects firms to use as part of the internal assessments of capital adequacy (ICAAP for banks and ORSA for insurers).[47],[48] Firms should use CSA to provide sufficient information to understand the link between climate-related risks and capital, including under stressed scenarios with severe tail risks materialising. Firms should demonstrate how they have adequately mitigated any material climate-related risks identified in CSA and have appropriately capitalised risks not otherwise mitigated (see paragraphs 4.6.19–4.6.20 and 4.7.9–4.7.13).
- **Valuation:** Banks may use CSA to support their assessment of the impact of climate-related risks for financial reporting (see paragraph 4.6.7) and to inform prudent

44 July 2015: SS31/15 ICAAP and SREP, para 3.4: **www.bankofengland.co.uk/prudential-regulation/publication/2013/the-internal-capital-adequacy-assessment-process-and-supervisory-review-ss**.

45 November 2016: SS19/16 Solvency II ORSA: **www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2016/ss1916**.

46 The PRA expects firms subject to SS19/16 ORSA and firms in scope of Chapter 15 of SS31/15 ICAAP to conduct reverse stress testing.

47 July 2015: SS31/15 ICAAP and SREP, para 3: **www.bankofengland.co.uk/prudential-regulation/publication/2013/the-internal-capital-adequacy-assessment-process-and-supervisory-review-ss**.

48 November 2016: SS19/16 Solvency II ORSA: **www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2016/ss1916**.

valuation of their positions measured at fair value.[49] Insurers may use CSA in order to include climate considerations when assessing the market-consistent valuation of assets and liabilities (see paragraphs 4.7.22–4.7.24)

Within the ICAAP for banks (see paragraphs 4.6.19–4.6.20) and the ORSA for insurers (see paragraphs 4.7.9–4.7.13), firms should adequately document and be able to demonstrate how CSA was applied to inform any identified objectives, and how the results of the analysis informed their decision-making.

Table 1: Examples of CSA use cases and considerations for scenario time horizons, frequency and calibration

CSA use case	Scenario time horizon	Frequency	Calibration
Business strategy	Medium to long-term, to capture impacts on the firm's business from longer term developments that may require action now	At least annually review whether the most recent long-term CSA still meets its objective, and consider updating in the case of a sudden change in external circumstances	Plausible 'central case' while recognising some climate-related impacts will materialise in all scenarios
Risk management	Typically short-term, but longer-term if relevant for firm's exposures	In line with the firm's risk management strategy	Should capture severe but plausible tail risks
Capital setting	In line with the firm's ICAAP/ORSA		Should capture severe but plausible tail risks
Valuation	In line with relevant accounting standards		Reflecting a range of selected scenarios and in line with relevant accounting standards

4.3.9 The time horizons selected for CSA should correspond to the firm's use cases for CSA (see Table 1), reflecting a firm's business strategy and risk appetite. For example, firms could consider longer time horizons to inform their business strategy. Firms should explain how they have considered plausible climate-related events in the future that might materially impact market developments and expectations relevant for their business planning and risk management.

4.3.10 Firms should conduct CSA with a frequency appropriate for their use cases, for example in line with the ICAAP or the ORSA for capital adequacy assessments. For objectives such as business strategy, which require longer term time horizons, firms should

49 Trading Book (CRR), Article 105 of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/trading-book-crr/3-trading-book-part-three-title-i-chapter-1-and-article-94-crr/article-105-requirements-for-prudent-valuation/28-06-2024?p=1**.

conduct CSA as warranted by changes in internal plans and external circumstances, which could be less frequent than annually (see Table 1).

4.3.11 Firms should include reverse stress tests as part of their CSA. Reverse stress testing should be appropriate to the nature, size and complexity of the firm's business and of the climate-related risks to its business model, which may vary from simpler, primarily narrative-based to more sophisticated approaches as appropriate (see paragraphs 3.8–3.11 and 4.3.13). Firms should identify a range of adverse climate-related impacts that would cause their business model to become unviable[50],[51] so that the board may satisfy itself that such scenarios are considered sufficiently unlikely.[52] For example, firms should consider transmission channels from climate-related events to their specific exposures, such as impacts of severe flooding on their property assets/liabilities or impacts of government transition policies on their sectoral lending/underwriting. Where reverse stress testing reveals that a firm's risk of business failure is unacceptably high, the firm should devise realistic measures to prevent or mitigate the risk of business failure.

4.3.12 Where firms are unable to conduct appropriate CSA, or where a decision has been made not to develop advanced CSA capabilities in line with the approach to proportionality (see paragraph 3.9–3.15), they should demonstrate an alternative approach to understand future climate-related risks.

Scenario analysis and calibration

4.3.13 The PRA expects firms to understand the design, application and limitations of the climate scenarios they use, and regularly review and, as relevant, update their models and toolkits (see paragraphs 4.1.4, 4.3.5, 4.3.18 and 4.3.19). Firms should consider a range of scenario construction techniques from primarily narrative-based scenarios, with expert judgement-based quantification of impacts, to sophisticated modelled scenarios that integrate physical climate, public policy, macroeconomic and microeconomic modelling. The PRA expects firms to explore a range of narratives in the initial risk identification phase and then, in line with the approach to proportionality (see paragraph 3.9–3.15), develop more granular quantitative CSA for the material risks that they choose to manage rather than avoid (see paragraph 4.1.11 and 4.2.13).

4.3.14 Firms using quantitative climate scenarios should take a structured approach to assessing each component of the model chain. This includes externally produced climate scenarios that consist of a complex chain of models combining projections for transition and physical risks under different emissions pathways by, for example, the United Nations International Panel on Climate Change (IPCC) or Network for Greening the Financial System

50 ICAAP Part of the PRA Rulebook, para 15.2: **www.prarulebook.co.uk/pra-rules/internal-capital-adequacy-assessment/08-07-2024**.

51 November 2016: SS19/16 Solvency II ORSA: **www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2016/ss1916**.

52 IAIS suggests including the identification of a climate-related risk scenario that could potentially cause insolvency.

('NGFS'). Firms should understand how the modelling assumptions, model dynamics and calibration position the output of that component in terms of severity and likelihood, and whether a given output reflects a less adverse, more central or a tail case. Firms should then assess the coherence of the components with the scenario narrative, and the severity and the relative likelihood of the overall scenario among the range of plausible scenarios. Firms should document and be able to communicate how they have assessed scenario components and justify how the selection and calibration choices they have made match their objectives and use cases (see paragraph 4.3.21).

4.3.15 In assessing the impacts of climate-related risks, firms should:

- **For physical risks:** assess their exposures at a sufficient level of geographic granularity to capture physical impacts – such as property-level exposures to flooding – that may not be adequately reflected in macro-level scenarios. This should include the impacts of climate change-related increases in frequency and intensity of acute natural hazards such as hurricanes, floods, droughts and heat waves, as well as longer-term climate change impacts, such as long-term changes in precipitation and average temperatures. Firms should use toolkits that incorporate models appropriate for assessing physical impacts such as natural catastrophe (NatCat) models.[53] Firms should further consider their exposures to cross-border spillovers of physical impacts. Firms should, as appropriate, incorporate additional analytical tools that draw on external modelling and scientific expertise.
- **For transition risks:** assess their exposures at a sufficient level of sectoral and, as appropriate, counterparty-level granularity (see paragraph 4.2.9), to capture risk dynamics and potentially severe impacts that may not be reflected in macro-level variable pathways. Firms should also consider concentration risks of their exposures to transition-sensitive sectors and counterparties.

4.3.16 Firms should seek to tailor their scenarios, in line with the approach to proportionality (see paragraphs 3.9–3.15), for risk identification of novel and complex threats such as assessing second order climate-related impacts or compound risks.[54]

Scenario governance, controls and review

4.3.17 Given the rapidly evolving nature of climate-related risks and the tools to manage these risks, including CSA models, CSA toolkits should be subject to challenge and periodic review by the firm (see paragraph 4.1.4). Through the review and challenge process, firms should consider the up-to-date scientific evidence, modelling advancements[55] and evolving industry practice,[56] as relevant.

53 IAIS recommendation for insurers.
54 www.bis.org/bcbs/publ/d572.htm.
55 www.bis.org/bcbs/publ/d532.htm.
56 This could, for example, include considering recommendations from relevant industry-led groups such as the Climate Financial Risk Forum (CFRF) or the international bodies such as the BCBS, IAIS and NGFS.

4.3.18 The board should understand the capabilities and limitations of the models and toolkits being used.[57] Where appropriate, the PRA expects firms to conduct sensitivity analysis to understand the materiality of model choice and calibration.

4.3.19 Firms should consider model and input data uncertainty, such as in models and data by external suppliers (see paragraph 4.4.1–4.4.4), when interpreting the results of CSA. Where data proxies and assumptions are used in CSA (see paragraph 4.4.3) firms should document and be able to communicate (see paragraph 4.3.21) the rationale for using and selecting particular assumptions and proxies. Firms should recognise that while providing a key means of assessing climate-related risks, current CSA toolkits do not capture the full range of those risks, and firms should be aware of and account for the remaining uncertainties (see paragraphs 4.3.4 and 4.3.18).

4.3.20 Firms should ensure the board has an adequate understanding of the CSA exercises (see paragraph 4.1.13), including inputs, assumptions, design, outputs, application and sources of uncertainty, to ensure it interprets scenario outputs with appropriate understanding of context and caveats. The board should understand how scenario analysis results are being used in practice, including their impact on decision-making.

4.3.21 Firms should communicate, internally to the board, to the PRA (such as in the ICAAP or the ORSA), and in relevant public-facing disclosures, the rationale for their scenario selection and calibration and how these meet their objectives. Firms should also clearly communicate any uncertainty and limitations when presenting their CSA results.

4.3.22 The board should ensure adequate resources are dedicated to address capability gaps[58],[59] and continue to develop adequate CSA capability and expertise as part of prudent management of climate-related risks (see paragraph 4.1.15).

4.3.23 Where a firm relies on management actions to mitigate the climate-related risks assessed by CSA, it should identify actions that should be taken in advance as precautionary measures.[60] For other management actions, or those that would be relevant or desirable only if the scenario emerges, firms should consider/identify whether these are realistic, credible, consistent with regulatory expectations, and achievable.

57 May 2023: SS1/23, Principle 2.3: **www.bankofengland.co.uk/prudential-regulation/publication/2023/may/model-risk-management-principles-for-banks-ss**.
58 October 2022: **www.bankofengland.co.uk/prudential-regulation/letter/2022/october/managing-climate-related-financial-risks**.
59 March 2023: **www.bankofengland.co.uk/prudential-regulation/publication/2023/report-on-climate-related-risks-and-the-regulatory-capital-frameworks**.
60 January 2022: **www.bankofengland.co.uk/prudential-regulation/publication/2015/the-pras-methodologies-for-setting-pillar-2-capital**.

Chapter 4: Data

4.4.1 Data and model uncertainty is an integral part of the climate-related risks firms must manage. Firms should identify and assess any data gaps to understand and quantify the extent of uncertainty and reflect this when setting risk appetite and developing risk management tools. This includes data gaps that exist either because the firm has not yet invested in the necessary data tools, frameworks and capabilities, or because appropriate and reliable data and disclosures for climate-related risk management are not yet available.

4.4.2 The PRA expects firms to identity significant data gaps on an ongoing basis. Where further investment in data tools is needed, firms should demonstrate plans to manage and remedy these gaps with processes in place to ensure that developments in data and tools will be identified and incorporated accordingly into their approach.

4.4.3 Where reliable or comparable climate-related data are not available, as an intermediate step, firms should have contingency solutions using appropriately conservative assumptions and proxies. Firms should document and be able to communicate the rationale for using and selecting particular assumptions and proxies. Where used, firms should also be able to demonstrate how these contingency solutions have been applied in order to meet the expectations set out in this SS, particularly with regards to ensuring effective risk management practices.

4.4.4 In order to produce better estimates of climate-related risks in their portfolios over time, firms should continue evolving their climate-related risk assessment capabilities (see paragraphs 3.6–3.7), both by focusing on their internal modelling and data capabilities over the short and long term and doing more to scrutinise data and projections supplied by external data suppliers. Firms should also balance appropriate use of data from external suppliers with the appropriate development of in-house capabilities over the short and long term. There should also be an effective system of governance to oversee and integrate any data from external suppliers, including understanding any limitations (see paragraph 4.1.16).[61]

4.4.5 Firms should also consider actively engaging clients, counterparties, investees and policyholders in collecting additional data (see paragraph 4.2.12).

4.4.6 A firm's risk data aggregation capabilities should include climate-related risks to facilitate the identification and reporting of risk exposures, concentrations and emerging risks. Firms should have systems in place to collect and aggregate climate-related risk data across the firm as part of their overall data governance and IT infrastructure in line with the approach to proportionality (see paragraphs 3.9–3.15). Firms should also put in place processes to

61 In relation to their use of third-party data providers, firms may wish to consider March 2021 SS2/21: **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. Additionally, paragraphs 4.4 and 14a provide detail on the governance of third-party arrangements.

ensure that the aggregated data are accurate and reliable. Firms may consider investing in data infrastructure and enhancing existing systems where appropriate to make it possible to identify, collect, cleanse and centralise the data necessary to assess material climate-related risks.

Chapter 5: Disclosures

4.5.1 Banks and insurers have existing requirements to disclose information on material risks (Article 432(1), DIS rules) within their institution's disclosures,[62],[63] and on principal risks and uncertainties in their Strategic Report[64] (as required under the UK Companies Act).

4.5.2 When meeting these existing disclosure requirements, the PRA expects firms to make disclosures where these are necessary to enhance transparency on the approach to managing climate-related risks, in line with the expectations set out in this SS. In particular, firms should disclose how climate-related risks are integrated into governance and risk management processes, including the process by which a firm has assessed whether these risks are considered material or principal risks.

4.5.3 The PRA expects firms to develop and maintain an appropriate approach to disclosure, reflective of the distinctive elements of climate-related risks. Firms should look to evolve their disclosures to make these as insightful as possible, and in particular, should ensure they reflect the firms' evolving understanding of climate-related risks. Firms should recognise the increasing possibility that disclosure will be mandated in more jurisdictions and prepare accordingly.

4.5.4 The PRA expects firms to engage with wider initiatives on climate-related risk disclosures, including UK Sustainability Reporting Standards, and to consider the benefits of disclosures that are comparable across firms. The PRA expects firms to consider engaging with other industry and regulatory initiatives in developing their approach to climate-related disclosures.

4.5.5 In addition, firms would benefit from greater disclosure in respect of climate-related risks across the wider economy and are in a strong position to encourage it through their ownership of financial assets.

62 Article 431 Disclosure Requirements and Policies (CRR) of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/disclosure-crr/16-01-2025#925500d9ed154860bd4de2d8b364ea84**.

63 Paragraph 3.3c of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/reporting/23-01-2025#7042c6c484d64f74967a9c2e93f57753**.

64 Contents of strategic report of the Companies Act 2006: **www.legislation.gov.uk/ukpga/2006/46/section/414C**.

Chapter 6: Banking-specific issues

This chapter applies to banks.[65] It covers accounting considerations and the internal capital adequacy and internal liquidity adequacy processes (ICAAPs and ILAAPs). It also includes the transmission channels through which climate-related risk affects the bank risk categories.

Financial reporting

4.6.1 The PRA expects that banks will be able to demonstrate that they have sound practices for climate-related risks that support timely recognition of such risks in their financial statements, in accordance with applicable accounting standards. High quality and consistent accounting practices for climate-related risks are important for ensuring the safety and soundness of PRA-authorised banks.

4.6.2 In line with the approach to proportionality (see paragraphs 3.9–3.15), the PRA expects that banks' risk management responses should be proportionate to the potential impact of climate change on their PRA-regulated activities, reflecting the nature, scale and complexity of their business models, currently and as they may develop in the future. The PRA expects that firms should meet the expectations set out in this SS in a way that also supports the timely recognition of climate-related risk in financial reporting.

4.6.3 When considering the practices that are needed to result in timely recognition of climate-related risk in their financial statements, banks should give due consideration both to the application of materiality in applicable accounting standards and how climate-related risks may evolve and impact their business models and financial statements in the future, as opposed to considering the potential impact of climate change solely based on the financial statement's position at the reporting date.

4.6.4 Banks should review and assess their own climate accounting capabilities periodically in the following four key areas:

- governance and financial reporting risk assessments;
- controls for use of forward-looking data in financial reporting;
- quantifying the impact of climate-related risks on balance sheets and financial performance; and
- quantifying the impact of climate-related risks on Expected Credit Losses (ECL).[66]

Governance and financial reporting risk assessments

4.6.5 The PRA expects banks to have appropriate and well documented processes to ensure the timely capture of climate-related risk for financial reporting purposes, subject to effective governance.

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65 Collective term 'banks' include banks, building societies, and PRA-designated investment firms.

66 The expectations on quantifying the impact of climate risks on expected credit losses (ECL) apply only to firms using an ECL accounting model (i.e. those applying IFRS or using IFRS 9 through FRS 102).

4.6.6 Effective governance should include clear allocation of responsibilities for oversight, including within the finance function (see paragraph 4.1.13). Banks should ensure identified climate-related risks, including those within the bank's sustainability reporting, are integrated within the judgements and estimates which support financial reporting.

4.6.7 Effective governance should also include oversight of the sufficiency, integrity and relevance of: (a) the quantitative analysis used to ensure climate-related risk is captured in a timely way, including use of CSA (see Chapter 3 on CSA); and (b) management information used to understand the implications of limitations in data and models and to provide challenge to how the bank has responded to those limitations (see paragraph 4.3.21).

Controls for use of forward-looking data in financial reporting

4.6.8 The PRA expects banks to have appropriate processes and controls in place to source, manage and enhance the data needed to factor climate-related risk into balance sheet valuations (see paragraph 4.4.1–4.4.6).

4.6.9 Banks should make use of a wide range of information, including forward-looking information used for risk management and capital adequacy purposes. Banks should use their experience and judgement in determining the range of relevant information that should be considered, and to ensure that relevant data available throughout the organisation are captured.

Quantifying the impact of climate-related risks on balance sheets and financial performance

4.6.10 The PRA expects banks to have sound practices and policies for assessing and measuring the impact of climate-related risk for their financial statements in accordance with accounting standards.

4.6.11 Banks' risk assessments should ensure that climate-related risk drivers that have the potential to affect balance sheet valuations are properly identified on a regular basis and assessed using robust quantitative analysis.

4.6.12 Banks should have robust controls over the policies and processes used to factor climate-related risk into balance sheet valuations. These should ensure complete, consistent and accurate capture of climate-related risk in accordance with accounting standards.

4.6.13 Banks should also ensure climate-related risk is sufficiently considered in accounting practices and policies for new and existing products, including tracking the materiality of the banks' aggregate exposure to instruments with climate-linked terms.

Quantifying the impact of climate-related risks on ECL

4.6.14The PRA expects banks to have sound practices and policies for assessing and measuring the impact of climate-related risk on lending exposures, which result in appropriate and timely recognition of climate-related risk within ECL in accordance with applicable accounting standards.

4.6.15 Banks should have well defined and documented processes to quantify exposure to borrowers most at risk, and to quantify the impact of specific climate-related risk drivers on ECL for those borrowers most at risk. This should include processes to identify the climate-related risk drivers that could influence ECL for loan portfolios that have the highest sensitivity to climate-related risk.

4.6.16 Banks' assessment policies should ensure quantitative analysis of the impact of climate-related risk drivers occurs not just at the individual lending exposure level but also at a portfolio level, to support challenge of the ECL calculation and inform use of Post Model Adjustments (PMAs).[67]

4.6.17 Banks' practices should not be static and should be reviewed periodically (see paragraph 4.1.4) to ensure that relevant data available throughout the organisation are captured and that financial reporting systems and processes are updated as banks' underwriting or business practices change or evolve over time. This periodic review should identify the requirements for data and models to factor climate-related risk drivers into loan-level ECL estimates and should consider how economic scenarios and weightings used for ECL calculations should be adapted to incorporate climate-related risk drivers.

4.6.18 Banks should use credit judgement based on experience to incorporate climate-related risk into the measurement of ECL, especially in the robust consideration of reasonable and supportable forward-looking information, including macroeconomic factors, and use of PMAs.

Internal Capital Adequacy Assessment Process (ICAAP)

4.6.19 As part of effective risk identification and assessment (4.2.1–4.2.4) and risk measurement and monitoring (4.2.14–4.2.19), the PRA expects banks to develop processes to identify, quantify and evaluate the solvency impact of climate-related risks that may materialise within their capital planning horizons. This includes as part of the Internal Capital Adequacy Assessment Process (ICAAP)[68] and stress testing programmes. As noted in paragraph 4.3.8, the PRA expects banks to use CSA as a key tool for these capital adequacy assessments.

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67 May 2023: SS1/23, Principle 5.1: **www.bankofengland.co.uk/prudential-regulation/publication/2023/may/model-risk-management-principles-for-banks-ss**.

68 July 2015 SS31/15 ICAAP and SREP, Chapter 3: **www.bankofengland.co.uk/prudential-regulation/publication/2013/the-internal-capital-adequacy-assessment-process-and-supervisory-review-ss**.

4.6.20 As part of their ICAAP, banks should include at a minimum:

- An assessment of how they have determined the material exposure(s) to climate-related risks in the context of their business. Banks should be able to evidence that the material climate-related risks included in the firm risk register (see paragraph 4.2.2) are appropriately capitalised. Banks should also be able to evidence how the judgement on risk materiality was made, including for those risks deemed immaterial. Banks should provide sufficient detail of their methodologies, scenarios used, underlying assumptions, judgements and proxies (see paragraph 4.2.3).
- An assessment of all material exposures over relevant time horizons (see paragraph 4.1.3) relating to climate-related risks that may negatively affect a firm's capital position (ie through their impact on traditional risk categories). This includes, where appropriate, incorporating material physical and transition risks that are relevant to a firm's business model, exposure profile and business strategy into their stress testing programmes in order to evaluate the bank's financial position under severe but plausible scenarios.

Internal Liquidity Adequacy Assessment Process (ILAAP)

4.6.21 As part of effective risk identification and assessment (4.2.1–4.2.3) and risk measurement and monitoring (4.2.13–4.2.18), the PRA expects banks to develop processes to identify, quantify and evaluate climate-related risks that may materially impair their liquidity and funding positions over relevant time horizons[69] and incorporate these in their internal liquidity and funding management systems and processes. This includes the Internal Liquidity Adequacy Assessment Process (ILAAP).[70,71]

4.6.22 Banks should assess whether climate-related risks could cause net cash outflows or depletion of liquidity buffers, assuming both 'central case' and stressed scenarios (considering severe yet plausible scenarios) (see paragraphs 4.3.2 and 4.3.8).

4.6.23 As part of ILAAP, banks should include at a minimum:

- An assessment of how they have determined the material exposure(s) to climate-related risks in the context of their business. Firms should be able to evidence that any exposures subject to material climate-related risks included in the firm risk register (see paragraph 4.2.2) are appropriately funded. Where any risks are deemed to be immaterial, banks should also be able to evidence how this judgement was made. Banks should provide sufficient detail of their methodologies, scenarios used, underlying assumptions, judgements and proxies (see paragraph 4.2.2).

69 For liquidity, these time horizons may be limited to 30 days depending on expectations for cash flows and liquidity positions (eg overnight or intraday liquidity exposures) across a range of conditions

70 June 2015: SS24/15, paragraphs 2.21-2.22: **www.bankofengland.co.uk/prudential-regulation/publication/2015/the-pras-approach-to-supervising-liquidity-and-funding-risks-ss**.

71 Paragraph 2.3 of the ILAA Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/internal-liquidity-adequacy-assessment**.

- An assessment of the impact of any material climate-related risks on net cash outflows (eg increased drawdowns of credit lines, accelerated deposit withdrawals) and the value of assets comprising their liquidity buffers. These assessments should inform the level of liquidity they should hold to meet the PRA's Overall Liquidity Adequacy Requirement.[72]

Risk types

4.6.24 The PRA expects banks to identify the transmission channels for, and the impact of, physical and transition risks on their traditional risk types and exposures (see paragraph 4.2.2).

4.6.25 Banks should clearly articulate their assumptions when considering these impacts and transmission channels, for instance, the role of insurance and government intervention in relation to the identified risks. Assumptions could include:

- the withdrawal of property insurance from physically exposed regions and any assumptions with respect to government backstops (eg Flood Re);
- assumptions around publicly funded adaptation measures such as coastal defences to combat sea-level rise; and
- government subsidies and cross-border taxes, where relevant to specific credit exposures.

4.6.26 Where such climate-related risks have been identified as impacting credit, market, operational and other risks, banks should consider the full range of options to adequately mitigate the risk.

4.6.27 Taking individual exposures in the aggregate, banks should assess and monitor the concentration of their exposures to geographies and sectors with higher climate-related risk (see paragraph 4.2.7), accounting for the way interactions between different risk drivers can work together to amplify the overall risk faced by the bank.

Credit risk

4.6.28 Banks should have a clear process for identifying, measuring and monitoring the channels through which climate-related risks impact credit risk (including counterparty credit risk and the effects of credit risk mitigation), as well as policies for mitigating identified risks on a timely basis.

4.6.29 Banks should integrate climate-related risks for both their own credit risk assessment and for due diligence performed on external ratings on an ongoing basis. At the level of individual exposures, banks should assess climate-related risks across the complete credit life cycle and evaluate the extent to which these risks may affect the borrower's overall default risk or the bank's ability to fully recover the value of the loan in a timely manner.

[72] See source in footnote 71.

Market risk

4.6.30 The emergence of new climate-related risks can result in negative price shocks and increased volatility and may reduce the effectiveness of hedges used to manage risk by changing historical trends and introducing new correlations between existing risks.

4.6.31 Banks should therefore use both long and short-term scenarios under different levels of stress to assess market risk in relevant portfolios (see paragraph 4.3.6). Banks should monitor the extent to which the prices of traded instruments in their portfolios vary with changes in climate-related risk drivers and manage the resulting market risk with appropriate policies and mitigants.

Reputational risk

4.6.32 Reputational risks can arise when a bank's position on climate change results in adverse customer sentiment and loss of future revenue. Although reputational risk is commonly associated with supporting activities that contribute to climate change, in some regions withdrawing support from these activities can also have negative consequences. As a result, banks may face strategic tensions, particularly if they have broad product offerings and geographical coverage.

Chapter 7: Insurance-specific issues

4.7.1 This chapter sets out specific expectations for insurers.[73] The expectations in respect of risk management frameworks (building upon the general expectations in Chapter 2 on Risk Management) and risk appetite apply to all insurers within the scope of this SS. The subsequent expectations on investments, own risk and solvency assessment (ORSA) (building upon Chapter 3 on CSA), Solvency Capital Requirements (SCR) and the preparation of balance sheet under Solvency II apply only to those insurers subject to those obligations.

4.7.2 Climate-related risks could be a driver of underwriting, reserving, market, credit, liquidity and operational risks faced by insurers as well as reputational and litigation risks. There is potential for these risks to be interrelated and thus magnified, and to increase over a longer time horizon.

Risk management

4.7.3 The PRA expects insurers to be able to identify, assess, monitor, mitigate and report climate-related risks where material (see paragraph 4.2.2).[74] Insurers should manage

73 Collective term 'insurers' include UK insurance and reinsurance firms and groups, i.e. those within the scope of Solvency II including the Society of Lloyd's and managing agents ('Solvency II firms') and non-Solvency II firms.

74 Paragraph 3.1 of the Conditions Governing Business of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/conditions-governing-business/22-08-2024**.

climate-related risks, that might emerge over short, medium and long-term horizons. The PRA expects insurers to manage their exposures to stay within their set risk appetites.

4.7.4 Further to paragraph 4.1.3, insurers are expected to assess the potential for financial losses on the contracts of insurance they have underwritten or expect to underwrite over the next 12 months, including the potential for losses to develop on the Technical Provisions (TPs)[75] or assets. Insurers with long tail exposures would need to consider the potential for financial losses over a longer time horizon than insurers with predominantly short tail exposures. Insurers are also expected to manage non-financial risks including reputational risk and risks to their business models over multiple time horizons.

4.7.5 Insurers should consider climate-related risks in their asset and liability management,[76] considering risks on both sides of the balance sheet as well as their interrelationships, where relevant. While risks may be greater for assets matching liabilities of longer duration, transition risks might be sudden and occur at a shorter time horizon. If climate-related risks are material, insurers should allow for the risk of individual assets or sectoral exposures being impaired over the period when the assets are intended to be held.

Risk appetite

4.7.6 Further to paragraph 4.1.8–4.1.12, insurers should express their risk appetite statements consistently with how they measure and monitor risks to enable effective management of the underlying exposures. Where insurers have existing risk appetites that could be impacted by climate-related risks, they should include the impact of climate-related risks consistently in their risk modelling, scenario analysis and risk appetite. For example, non-life insurers often manage their exposures to weather perils such that their modelled Probable Maximum Losses at a defined return period (eg 1 in 250 years) are less than their risk appetite (eg £x million), and both life and non-life insurers often manage their asset risk such that the loss on an asset class is no more than their risk appetite (eg £ymillion) at a defined tolerance level (eg 1 in 100 years). Insurers should include their views of the impact of climate-related risks in these assessments, supplementing these with CSA to understand and illustrate the uncertainty where appropriate. Insurers are expected to be more prudent in their underwriting or investment where they are less able to assess the risk reliably (see paragraphs 4.4.1–4.4.3).

4.7.7 Under the Prudent Person Principle (PPP), Solvency II insurers should only invest in assets for which risks can be identified, measured, monitored, managed, controlled and

75 Glossary, 'Technical Provisions' of the PRA Rulebook: **www.prarulebook.co.uk/glossary?Date=27-11-2024&SearchTerm=technical%20provisions&AZ=T**.

76 April 2013: LSS1/13: Asset and liability management: suggestions for greater effectiveness: **www.bankofengland.co.uk/prudential-regulation/publication/2013/asset-and-liability-management-suggestions-for-greater-effectiveness-lss**.

reported.[77] A key requirement of the PPP for the purposes of this SS is that, where insurers bear the investment risk, insurers must diversify their assets to avoid excessive accumulation of risk in the investment portfolio. Solvency II insurers should therefore consider whether there is an excessive accumulation of climate-related risks, particularly if risks are likely to crystallise via the transition risk factor. Mitigants should be identified if risk accumulation is found to be excessive.

Own risk and solvency assessment (ORSA)

4.7.8 As part of effective risk identification and assessment (see paragraphs 4.2.1–4.2.4) and risk measurement and monitoring (see paragraphs 4.2.14–4.2.19), the PRA expects insurers to develop processes to identify, quantify and evaluate the solvency impact of climate-related risks that may materialise within their capital planning horizons, including as part of the ORSA.[78]

4.7.9 As part of the Stress and Scenario Testing (SST) component of their ORSAs, insurers should include CSA unless the impact is demonstrably immaterial (see paragraph 4.3.8). Insurers should consider the latest climate science and advances in climate scenario modelling.

4.7.10 Further to the expectations set out in the CSA chapter, the PRA expects insurers to build on the global scenarios selected for their SSTs to explore the climate-related risks to their business model over relevant time horizons (see paragraph 4.1.3). The PRA expects insurers to make assumptions and build scenarios sufficiently granular to stress for the risks they face (eg tropical storms, flooding, non-natural catastrophes, longevity risk, mortality risk, credit risk, equity risk, lapse risk). This analysis should build on the parameters and outputs of the global scenarios that the insurer considers relevant (eg sea surface temperatures, precipitation, GDP, inflation, interest rates, unemployment rates).

4.7.11 Insurers should specify in their ORSA the management actions they would take in different circumstances, describing what would trigger those actions. Sufficient detail should be provided to enable the PRA to form a view of the reasonableness of each action. For example, management actions might include changes to underwriting (eg increased deductibles or reduced limits for flood exposures) or to investment strategy (eg reduced exposure to some economic sectors or subsectors). Insurers should describe what indicators or metrics they would monitor to inform their decisions and when they would take the management actions. Insurers should be prudent in making any assumptions on market

77 Articles 132(1) – (2) of the Solvency II Directive of the PRA Rulebook: **www.prarulebook.co.uk/rulebook/Content/Chapter/212928/07-08-2018**. See also May 2020: SS1/20: Solvency II: Prudent Person Principle: **www.bankofengland.co.uk/prudential-regulation/publication/2020/solvency-ii-prudent-person-principle-ss**.

78 To be considered as part of SS19/16: Solvency II: ORSA: **www.bankofengland.co.uk/prudential-regulation/publication/2016/solvency2-orsa**. And for non-life firms, together with SS26/15: Solvency II: ORSA and the ultimate time horizon - non-life firms: **www.bankofengland.co.uk/prudential-regulation/publication/2015/solvency2-orsa-and-the-ultimate-time-horizon-non-life-firms-ss**.

availability, liquidity or price levels (eg in respect of reinsurance), bearing in mind the possible systemic nature of the scenarios and the potential for other insurers or market participants to act in a similar way.

4.7.12 In conducting the ORSA, insurers should consider the climate-related reputational and litigation risks from their investment and underwriting strategies as well as from their wider engagement on climate change and the transition to net zero. Insurers, especially those who are large institutional investors or large commercial underwriters, might be exposed to litigation or to a loss of future business. Where insurers have made climate-related public commitments or offer sustainability branded products, there are additional risks that these are perceived as misleading if unclear, or not adequately followed through, leading to claims of greenwashing. Although reputational risk is commonly associated with insurers supporting real economy activities that contribute to climate change, withdrawing support from these activities could also lead to adverse effects. As a result, insurers may face strategic tensions, particularly for complex insurers with broad product offerings and geographical coverage.

Solvency Capital Requirement (SCR)

4.7.13 Insurers subject to SCR should reflect the impact of climate change on their SCR calculations, where material. Insurers using an Internal Model (IM) to calculate their SCR should consider the impact of climate change on the underwriting risk, reserving risk, market risk, credit risk and operational risk components of their IM, where material. As part of their assessment of whether the Standard Formula (SF) calculation is appropriate for their risk profile, insurers using the SF should consider whether the impact of climate-related risks leads to a change in their assessment.

4.7.14 While the SCR is based on the movement over the next year of the Own Funds (including the business planned to be written over that period), risks captured will be over a time frame longer than one year depending on the expected term of the insurer's liabilities. Insurers are expected to capture how climate-related risks could impact the variability of their cashflows over the term of the TPs as well as the market and credit risk of the assets supporting those liabilities. This is particularly relevant for insurers with substantial long tail liabilities eg annuities or Periodical Payment Orders.

Underwriting and reserving risk

4.7.15 From an underwriting risk perspective, non-life insurers should consider the impact of climate change on their natural catastrophe risk. Insurers should assess whether the impact of climate change has been sufficiently factored into quantitative tools (eg natural catastrophe models) used for assessing either present day or future weather-related perils (eg tropical cyclones, flooding, droughts, wildfires). Insurers should also make any adjustments needed to reflect their own view of such impact where it is material. For all weather perils, insurers should consider how climate change might lead them to incur larger claims than might have been expected from analysing historical experience only. In their model validation, insurers

should explicitly consider how the impact of climate change is reflected in the modelling of the climate-related perils that make a significant contribution to SCR.

4.7.16 Non-life insurers should consider the potential for climate change to lead to an accumulation of claims under the liability insurances they underwrite (eg Directors and Officers, Product liability, Public Liability), considering the pattern of emergence of claims under these contracts. Insurers should allow for the possibility of claims to emerge under multiple contracts and underwriting years where applicable. Where the exposures to these types of claims are large, their modelling of non-natural catastrophes should include an allowance for climate claims.

4.7.17 Life insurers should consider the impact of climate change on their mortality and morbidity assumptions, eg from the impacts of an increase in extreme weather events or a change in the incidence of respiratory or water borne diseases. Life insurers should consider how lapse rates may change under the economic and social circumstances they assume under different climate scenarios.

4.7.18 Insurers should ensure effective information sharing between functions dealing with reserving, claims, underwriting, exposure management and risk management to understand feedback loops relevant to climate-related claims or potential claims and corresponding exposures.

Market risk

4.7.19 When setting parameters for market risk, insurers should consider that the distribution of future returns may be more variable than historical experience due to climate-related risk, with the potential for variations at granular levels (eg for different sectors, subsectors or geographies) and sudden increases. Insurers should understand whether and how external models used such as Economic Scenario Generators (ESGs) factor in climate-related risk.

Credit risk

4.7.20 Insurers should understand to what extent the methodologies of the external credit ratings they use allow for climate-related risk and make adjustments where they judge appropriate. For both externally and internally rated assets, insurers should consider the impact of climate-related risk on the cost of downgrades, probability of default and loss given default, where climate constitutes a material risk.

4.7.21 When considering their counterparty exposures (see paragraphs 4.2.6–4.2.12), including to major reinsurers across multiple classes of business or to banks and other financial institutions for their derivative exposures, insurers should engage with their major counterparties to understand their exposures to climate-related risk, and how their business model would change in response. Where the exposure is collateralised, insurers should consider to what extent the underlying assets could be impaired, as a result of climate-related risk, where material.

Regulatory balance sheet

4.7.22 Under Solvency II, balance sheet valuations are calculated on a market consistent basis. No adjustment should therefore be made to market values for liquid traded assets or to assets that derive their value from observable market prices. However, insurers may need to use a valuation technique or adjust a transaction or quoted price where there is no active market for an identical asset or where a transaction price or quoted price does not represent fair value. Insurers' valuations should reflect the assumptions that market participants would use when pricing, including assumptions about climate-related risk.

4.7.23 Insurers using the Matching Adjustment (MA)[79] should consider for their internal credit assessments all possible sources of credit risk, both qualitative and quantitative,[80] including climate-related risks, where material. Such insurers should also ensure that there is broad consistency between internal credit assessment outcomes and issue ratings that could have been produced by a credit rating agency (CRA).[81] Insurers may therefore need to consider the extent to which climate-related risks are factored into credit rating methodologies used by CRAs when assessing their own internal rating methodologies. Finally, as part of the MA attestation, insurers should consider the extent to which the Fundamental Spread reflects compensation for all retained risks, including climate-related risks.[82]

4.7.24 Non-life insurers should ensure that their TPs include expected losses from climate-related risks under policies already underwritten. Where there are exposures, unearned premium reserves should allow for the impact of climate-related risk on expected weather losses, considering that past experience may not necessarily be indicative of future experience. Life insurers should ensure that their best estimate mortality, morbidity, lapse and expense assumptions are appropriate given the potential impact of climate change. Where climate-related risk is significant, the impact on risk margins should be commensurate given the considerations outlined in the SCR section (see paragraphs 4.7.13 - 4.7.14).

79 This paragraph is relevant to UK Solvency II firms and the Society of Lloyd's and its managing agents only, where they are applying for, or have, permission to use the MA. See PRA's rules in the Solvency II Sector of the PRA Rulebook.

80 Paragraph 7.2(1) of the Matching Adjustment Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/matching-adjustment**.

81 Paragraph 7.2(3) of the Matching Adjustment Part of the PRA Rulebook: **www.prarulebook.co.uk/pra-rules/matching-adjustment.**

82 July 2018: SS7/18 Solvency II: Matching Adjustment, paragraph 5.31-5.41: **www.bankofengland.co.uk/prudential-regulation/publication/2018/solvency-2-matching-adjustment-ss**.