

How large US banks manage climate- related financial risks

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Contents

Summary4

1. Introduction.....6

2. Main findings 10

3. Conclusion and next steps..... 15

References 16

Summary

US-based global systemically important banks (G-SIBs) remain focused on managing climate risks and are developing new ways of identifying and assessing such risks, even as they are publicly scaling back their net zero commitments and the US policy environment moves away from dedicated supervision of climate-related risks. It is vital to understand how banks are managing these risks and how disclosure can provide investors, counterparties and policymakers with decision-useful information.

We examined the public disclosures of six large US banks to assess how they incorporate climate-related risk drivers into risk management practices and business strategies: Bank of America, Citigroup, Goldman Sachs, JPMorgan Chase, Morgan Stanley and Wells Fargo. All these banks have been designated as systemically important in the US.

Findings

The core risk management architectures, analytical tools and investment in climate-risk capabilities employed by these banks have remained broadly intact across consecutive disclosure cycles and, in some cases, become more sophisticated. This is despite the fact that these banks have reduced the prominence of net zero targets and language related to environmental, social and governance (ESG) policies in their disclosures.

These banks continue to embed climate risk drivers in mainstream enterprise risk management. They generally treat climate change as a cross-cutting driver of traditional risks, particularly credit risk, rather than as a standalone category. The banks are increasingly incorporating climate considerations into established governance structures, risk taxonomies, credit assessments, client transition assessments and portfolio-level monitoring. These considerations also inform how these banks engage with their clients and seek new business opportunities.

The disclosures of these banks suggest a clear separation between the management of climate-related financial risks, which sits within conventional risk functions and the 'three lines of defence' model, and their sustainability commitments. This distinction has become more visible as the banks have revised or withdrawn their sustainability commitments while maintaining their risk-management processes.

These banks disclose much more detail about how they assess climate risks than they do about the results of these assessments. Disclosures provide substantial detail on scenario analysis, modelling, stress testing and assessment methodologies, but much less on how findings affect pricing, underwriting, risk appetite, portfolio construction or concentration limits. This creates a significant gap between process-oriented disclosure and genuinely decision-useful information.

The box on the next page contains a summary of the results arising from our four-pillar framework analysis covering governance, strategy, risk management approaches and risk management tools.

Policy implications

Despite adopting a less prominent climate narrative, these large banks continue to invest in data, modelling, scenario analysis and specialised risk capabilities. This does not imply that climate-related financial risks are material for every bank or exposure. Rather, it shows that these large banks continue to allocate scarce risk management resources to understanding these risks.

The set of practices emerging at these large banks can help supervisors identify where climate-related risk management is becoming a normal component of enterprise risk management. It can also help supervisors understand where there are still gaps between risk assessment and concrete action, and which approaches may be relevant to smaller institutions that have fewer resources.

If banks were to place a greater emphasis on decision-useful disclosure, this would help investors, counterparties and policymakers. It is important to understand the methodologies that banks use to manage climate-related financial risks, but assessing the financial relevance of these risks will require clearer information on the type and materiality of risks that banks identify, and on how their assessments influence risk management decisions in practice.

Summary of findings for the six reviewed US banks across four pillars

- **Governance.** Climate-related risk drivers are largely integrated into existing governance structures, with oversight embedded in traditional board and management duties. Most of the banks have established dedicated climate risk capabilities within the independent risk management and control functions responsible for oversight and challenge, often referred to as the second line of defence, alongside separate governance structures for sustainability and environmental, social and governance (ESG) matters. Some of the banks are de-emphasising their ESG and sustainability work, including their net zero commitments and sectoral decarbonisation targets.
- **Strategy.** The banks consistently emphasise that meeting clients' needs is their primary business objective, while incorporating climate considerations into their broader approach to commercial, regulatory and market factors. Frameworks for analysing sectoral exposure and client transition dynamics increasingly inform banks' engagement strategies. Client-level assessments of climate risk often feed into these frameworks.
- **Risk management approaches.** The banks consistently treat climate change as a cross-cutting risk driver that affects traditional risk categories, particularly credit risk, rather than as a standalone risk category. US G-SIBs have made progress in developing tools to identify and assess climate-related risks. However, their disclosures provide little insight into their concrete risk management actions or how risk assessment translates into pricing, risk appetite and portfolio limits. This makes it difficult to assess the extent to which climate-related financial risks have been integrated into core decision-making.
- **Risk management tools.** The banks are investing in data, infrastructure and modelling capabilities linked to climate scenario analysis and stress testing. While the banks often provide detailed accounts of the methodologies and assumptions underpinning their climate stress testing and scenario analysis exercises, there is limited disclosure of outcomes. Moreover, despite a reduced emphasis on climate-related commitments in recent disclosures, there is little evidence that banks' development of climate-related risk management tools has slowed.

1. Introduction

This policy insight documents the publicly available disclosures of the six deposit-taking US global systemically important banks (G-SIBs) and how they incorporate climate-related risk drivers into risk management practices and business strategies, also informed by a wider literature review. We focus on the practices related to governance, strategy, and risk management approaches and tools that these banks are developing to manage climate-related risks and to seek climate-related business opportunities.

Why review banks' climate risk management?

Climate-related risk drivers increasingly contribute to financial risks.¹ On the physical risk side, for example, Swiss Re Institute (2026) estimates that climate-related insured losses are rising by 5–7% per year in real terms and that more than half of the US\$220 billion of natural catastrophe losses in 2025 were uninsured. On the transition risk side, geopolitical and policy shocks create uncertainty about the pace and likelihood of a transition to a low-carbon economy and related investment opportunities. In both cases, the impact is likely to vary considerably across jurisdictions, economic sectors and banks' business models.

Financial firms and their supervisors and regulators are aware of climate-related drivers of traditional prudential risks, such as credit, market and operational risks (Basel Committee on Banking Supervision [BCBS], 2022a). From a broader risk management perspective, however, climate change has distinctive characteristics that might require additional attention. For example, physical risks are increasing as part of a secular, broad-based trend; uncertainty about the precise timing and type of climate impact makes strategic planning more difficult; and historical data and models are likely to be insufficient for identifying risks amid shifts in the distribution of climate shocks.

At the same time, global supervisory practices are diverging. Some jurisdictions continue to focus on climate-related risk drivers through enhanced supervisory guidance (Bank of England [BoE], 2019; 2025; European Banking Authority [EBA], 2025; Office of the Superintendent of Financial Institutions [OSFI], 2025a) and targeted enforcement actions (European Central Bank [ECB], 2025). Others, such as the US federal banking regulators (Office of the Comptroller of the Currency [OCC], Federal Reserve Board and Federal Deposit Insurance Corporation [FDIC]), have rescinded their climate-related risk management guidance (FDIC, 2025). Meanwhile, the Governors and Heads of Supervision (GHOS, 2025), which provides oversight of the BCBS, has narrowed its climate-related work to the analysis of financial risks linked to extreme weather events, after abandoning a holistic approach to developing measures related to disclosure, supervision and regulation.

In the financial sector, it is difficult to see how firms are managing these risks. Several G-SIBs, particularly those based in the US, have left organisations such as the Net Zero Banking Alliance (NZBA) – which ceased operation in October 2025 – and are disclosing less than before about some climate-related activities, such as decarbonisation targets (TPI Global Climate Transition Centre, 2025). There is some speculation that financial firms are talking less about climate-related financial risks due to external pressures while still investing in understanding and managing the risks. However, it is difficult to assess whether this potential shift from 'greenwashing' to 'greenhushing' is occurring (*The Economist*, 2025; Stiroh, 2025).

Given the pullback from the official sector, particularly in the US, this is an appropriate time to review the practices of large banks. Without pressure from the regulatory sector to focus on climate-related financial risks, the practices that banks choose to pursue are more likely to reflect their underlying business needs to manage risk and develop opportunities with clients. At the same time, banks may be facing political pressure to do less with respect to these risks, so the net impact is unclear.

¹ See the BCBS's work (BCBS, 2021a; 2021b) for an overview of climate-related risk drivers and measurement methodologies, respectively.

Activities related to corporate social responsibility goals, such as net zero commitments and other decarbonisation targets, are outside the scope of this study. Similarly, this is not an assessment of best practice but a summary of the range of banks' current practices.

Are climate-related financial risks material for banks?

The critical risk management issue for banks is whether climate-related risk drivers can generate material financial risks over the normal risk management time horizon, which typically ranges from short-term market and liquidity time horizons to medium-term credit, capital planning and strategic planning timeframes. The current literature provides only limited evidence of materiality. For example, large-scale scenario analyses conducted by central banks and supervisory authorities typically find that climate-related risk drivers have moderate impacts (BoE, 2022; ECB, 2022; Federal Reserve Board, 2024; OSFI, 2025b). Similarly, in a review of over 230 studies, de Bandt et al. (2024: 2) conclude that "despite notable progress in terms of the quantity and quality of studies published in recent years, the cumulative impact of physical and transition risks on banks' exposures remains difficult to quantify for several reasons".

A plausible explanation for this, discussed in several of the studies, is that estimates of climate-related risk drivers' potential impact on banks may be understated. For instance, the results are often based on backward-looking models and data; there is a great deal of uncertainty about both the future distribution of shocks and economic transmission mechanisms; the results often focus on the direct effects of climate shocks and do not include indirect effects, such as the impact on infrastructure, broader macroeconomic dynamics or supply chain effects; and there is often a focus on relatively small shocks in large-scale scenarios that do not include disorderly adjustments or tipping points.

Ultimately, the question of materiality is an empirical one but, given the deep uncertainty, a prudent approach to risk management would be to develop tools to identify, measure and manage potential risks. For example, BCBS (2022b) stresses that it would be appropriate to take a conservative approach to climate-related financial risks when there is insufficient information on them to make an accurate assessment.

Understanding the range of practices is important regardless of whether one believes climate-related risk drivers are currently material. Supervisors need to understand how banks are allocating scarce risk management resources. If these risks are viewed as material, are they being managed effectively? Are there gaps? If these risks are not viewed as material, are banks being distracted from more material financial risks? Should they reprioritise? Either way, a first step is to better understand more about what large banks are doing to make informed policy choices. Similarly, investors need to understand both the potential risks a bank faces and how it is allocating its scarce risk management resources.

How are supervisors responding?

In the mid-2010s, Mark Carney in his role of Governor of the Bank of England (BoE) motivated central banks and supervisors to take an interest in the financial risks of climate change (Carney, 2015). The Network for Greening the Financial System (NGFS) built on this with efforts that involved microprudential and macroprudential supervision (NGFS, 2019). Major supervisory authorities such as the BoE (2019), the European Central Bank (2020) and the Federal Reserve Board (2023) then issued supervisory guidance or expectations. The BCBS issued principles for effective risk management and the supervision of large, internationally active banks, and provided answers to frequently asked questions from a regulatory perspective (BCBS, 2022a; 2022b). These supervisory guidelines had common features in governance, internal controls, risk identification and monitoring, scenario analysis and the management of specific risks, such as credit, market and operational risks.

More recently, supervisory practices have diverged. The BoE (2025) updated its supervisory expectations with a focus on building capabilities in a proportionate manner to manage climate-related financial risks linked to governance, risk management, climate scenario analysis, data and disclosures. Similarly, the EBA has issued updated guidelines on the management of ESG risks, including climate-related risks (EBA, 2025), while the ECB's priorities for 2025–27 include an effort to address deficiencies in business strategies and risk management practices linked to climate-related and environmental risks (ECB, 2024). Moreover, the ECB has imposed periodic penalty payments on one

bank for its failure to comply with ECB requirements for materiality assessments of climate-related and environmental risks (ECB, 2025). The BCBS (2025) issued a voluntary disclosure framework. The NGFS has maintained an ongoing workstream on supervision, with a focus on transition planning, nature risks, governance, and updating its guide for supervisors (NGFS, 2020; 2026).

The BoE's initial assessment of UK banks' approaches to climate-related financial risks referred to positive steps on governance and risk management practices, but varying levels of progress across firms (Woods, 2022). Similarly, European banks made progress on managing climate-related risks but still required broader coverage of exposures, geographies and risk categories (Elderson, 2025).

By contrast, US federal banking regulators rescinded their 2023 principles for managing climate-related financial risks because they were viewed as unnecessary and "could distract from the management of other potential risks identified and addressed by financial institutions' existing risk management processes and the agencies' other risk management rules and guidance" (FDIC, 2025: 3). This divergence makes it harder for larger, internationally active banks to meet supervisors' risk management expectations and increases the regulatory burden.

The literature on banks' behaviour

The literature on banks' responses to climate change is broad enough to cover a range of activities, including those linked to risk management and sustainability objectives. Several papers have reviewed banks' practices in this area. A review of the climate action plans of global systemically important banks (G-SIBs) concludes that banks have started to measure and model climate-related risks, while acknowledging this work is nascent and faces challenges linked to data availability and uncertainty around climate-related shocks and impacts (Beltran et al., 2023). The United Nations Environment Programme – Finance Initiative (UNEP-FI, 2025) reports that 32 mid-sized and large banks have made meaningful progress in climate-related credit assessments and reports, despite facing various ongoing challenges. The UNEP-FI survey reports that 62% of surveyed banks use the results of these assessments for reporting and regulatory compliance. Around two-thirds use their credit risk assessments for "modest interventions" such as adjusting client ratings, asking clients to manage risks and employ action plans, and adjusting loan pricing. Another study used artificial intelligence to review the public disclosures of 50 banks and assess their relative performance on a broad range of adaptation and resilience issues, including materiality thresholds for physical risks or initiatives to embed resilience in internal processes and risk management frameworks (Climate Proof and ClimateAligned, 2025). That report finds that banks generally do well in physical climate risk assessments but that there are significant differences between them in this area, with US banks tending to lag behind their counterparts.

The literature also provides insights into specific approaches to risk management, such as risk-based pricing. Banks charge higher prices for properties exposed to sea-level risk but mostly do so over longer time horizons (Nguyen et al., 2022). From 2001 to 2021, banks' pricing of syndicated loans incorporated the climate risk of fossil fuel firms through larger credit spreads and shorter maturities, but they continued to lend to those companies (Demetriades and Politsidis, 2025). In banks' pricing of physical risk, higher climate vulnerability leads to higher borrowing costs, particularly for long-duration loans and for borrowers in financial distress (Kempa, 2026). Moreover, banks adjust non-price terms such as loan size, collateral and fees in response to climate vulnerability. They also incorporate flood risk outside of designated flood zones into risk management practices, e.g., higher underwriting standards and greater securitisation for loans (Blickle et al., 2024). Natural disasters tend to weaken banks' performance through, for example, higher probabilities of default and lower returns (Noth and Schüwer, 2023). By contrast, natural disasters have modest effects on bank performance, as demand for loans tends to rise in their aftermath (Blickle et al., 2025).

Approach and methodology

We examined the public disclosures of Bank of America, Citigroup, Goldman Sachs, JPMorgan Chase, Morgan Stanley and Wells Fargo, all of which have been designated as systemically important in the US. The review focused on the integration of climate-related considerations into enterprise risk management (ERM) practices.

The review commenced in the third quarter of 2025, including the latest climate-related disclosures available for each institution at that time and covering reporting years 2023 and 2024. The source materials we reviewed included climate reports, sustainability reports, TCFD [Task Force on Climate-Related Disclosures]-style disclosures, corporate web pages and annual reports – see list on p18. During the review, several institutions published new climate-related disclosures. As a result, the analysis ultimately covers two consecutive disclosure cycles across the same sample of banks. This timing proved particularly useful given the significant changes in the broader climate-finance and policy landscape between the last two disclosure cycles, including the dissolution of the NZBA and the broader shift across parts of the financial sector. Reviewing consecutive disclosure cycles made it possible to draw a cross-sectional comparison across institutions and to carry out a limited comparative assessment of how disclosures, areas of focus, tone, terminology and institutional positioning evolved over time for each institution.

We summarise the results of the review in Section 2 around a four-pillar framework covering governance, strategy, risk management approaches and risk management tools. Within this framework, we identify and synthesise information on how banks incorporate climate-related risk drivers, paying particular attention to observable practices such as organisational structures, analytical tools and decision-making frameworks. We also compare these insights to information from more informal engagement with individual banks and industry-level discussions.

The analytical framework emerged iteratively through the review process. The initial review centred primarily on sections of disclosures explicitly labelled as relating to climate risk or risk management. As the review progressed, however, it became clear that many practices relevant to climate-risk management sat outside these explicitly labelled sections, including within governance structures, sectoral strategy discussions, client engagement frameworks, scenario analysis methodologies and operational risk processes. Rather than imposing a rigid taxonomy from the outset, the review adopted a bottom-up approach centred on a series of underlying analytical questions related to how institutions identify, measure, assess, manage and govern climate-related financial risks.

The review focuses on topics including: how responsibility for climate-related issues is allocated across boards and senior management; whether climate considerations are integrated into existing risk taxonomies; how climate-related drivers are translated into traditional financial risk categories; what role climate considerations play into client and sectoral decision-making; the forms of data, modelling and scenario analysis that are employed; and how institutions are building organisational capacity to support these activities. During the review of disclosures, we grouped observations according to the underlying set of questions they addressed. Over time, these more granular questions coalesced into the four pillars of the analytical framework.

The resulting structure partially overlaps with the established disclosure frameworks used by financial institutions – most notably, the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD, 2017). This overlap is unsurprising given that most of the reviewed disclosures of US G-SIBs are broadly structured around TCFD-style reporting categories. However, the framework employed in this paper was not designed primarily to replicate any single external reporting standard. Rather, the categories reflect the disclosures themselves and the types of questions that investors, counterparties and supervisors may reasonably ask when seeking to understand how banks are integrating climate-related risk drivers into existing ERM frameworks.

The analysis in Section 2 is descriptive in nature and does not evaluate the effectiveness of individual approaches or seek to define best practices. It aims to provide a comparable overview of the range of practices implemented across institutions, based on publicly available information.

This type of qualitative review provides useful insights into banks' approaches to risk management, but comes with two important caveats. First, the review is limited to banks' publicly disclosed documents, which might not fully capture the detail and nuance of all their risk management activities. For example, banks might not disclose all relevant information out of proprietary or legal concerns, or might overstate or understate their activities depending on external pressures. Second, the review focuses only on the banks that, due to their diversified business models and dedicated risk management resources, are likely best positioned to identify and manage climate-related risk drivers.

This is a concern because small, concentrated banks are potentially the most vulnerable to climate-related risk drivers (Climate-Related Financial Risk Advisory Committee, 2025).

2. Main findings

Governance

The management and oversight of climate-related risk drivers appear to be broadly incorporated into the existing governance architecture rather than addressed through distinct or standalone governance structures. Consistent with established supervisory expectations, responsibility for the management and oversight of these drivers follows traditional lines: the board of directors retains oversight while senior management is responsible for execution, with senior leaders addressing climate-related risks in their broader discussions of enterprise risk and strategy.

At the board level, oversight of climate-related risks is usually exercised through existing committees, particularly risk and audit committees. However, some of the banks have also established dedicated board committees focused on ESG or sustainability matters. The disclosures of banks that have such dedicated committees tend to include a more explicit articulation of climate considerations in their business strategies and external positioning.

At the same time, disclosures from the most recent cycle indicate a shift in how this information is presented, with some banks renaming committees to remove explicit references to ESG or sustainability from their titles. While the underlying remit of these bodies appears largely unchanged, this evolution suggests a reduced emphasis on explicitly labelling sustainability and climate governance even where such governance is still integrated into strategic and operational processes. These two changes are consistent with the idea of greenhushing.

At the operational level, tools and procedures for the management of climate-related risks are often embedded within the ERM framework and activated according to the firm's 'three lines of defence' model. First-line business units are described as responsible for identifying and managing climate-related risks in their activities, particularly through sectoral exposure management and client engagement. The second line, led by the risk function, is responsible for developing tools, methodologies and frameworks to assess these risks, while also providing oversight. Disclosures contain only limited references to the role of the third line of defence, internal audit, in reviews of climate-related risk processes.

Several of the banks have introduced dedicated climate-related risk functions in the second line of defence, reflecting the importance of the risk function in developing methodologies and exercising oversight and challenge in this area. The presence within several institutions of a dedicated 'Head of Climate Risk' function suggests an increasing degree of formalisation in the identification, assessment, measurement and management of climate-related financial risks. The formalisation of dedicated climate risk units underscores the broader development of specialised internal capacity and expertise within the traditional risk management/three lines of defence model.

A feature common to all six US banks is a separate governance track for climate-related financial risks and broader sustainability or ESG matters. Climate risk is typically embedded within risk governance structures, which are linked to the chief risk officer (CRO) function and ERM processes, whereas distinct committees or executive functions oversee sustainability topics, including net zero commitments, sustainable finance targets and disclosure practices.

Strategy

The reviewed banks exhibit a wide range of approaches to incorporating climate-related considerations into their business strategies. In some cases, climate-related risks are integrated into broader discussions of risk, opportunities and client engagement, while in others they are treated as a distinct or standalone issue. Across institutions, however, there is a consistent recognition of the heterogeneity of climate-related impacts across sectors and geographies, and the corresponding

need for granular, client-specific assessments. This is addressed via the development of analytical frameworks to assess sectoral exposure and client transition dynamics.

In several cases, climate-related risk assessments are incorporated into the evaluation of clients' transition plans. The analytical frameworks underpinning assessments of these transition plans are developed internally and differ in their components and structure across institutions. In most cases, these frameworks combine an assessment of the client's emissions profile with forward-looking considerations on transition strategy and an assessment of climate risk. The level of formalisation of these processes varies across banks, with some describing structured frameworks and others referring to broader integration into existing credit and relationship management processes.

US G-SIBs' disclosures consistently emphasise that meeting the needs of clients is the primary business objective. They frequently frame their role as that of intermediaries, facilitating client adaptation to evolving economic, business, operational and regulatory conditions, including the transition to a lower-carbon economy. Within this framing, climate-related considerations are positioned as one of several factors shaping client relationships, alongside commercial, regulatory and market dynamics. At the same time, most of the banks reviewed also refer to broader objectives, such as supporting access to affordable, reliable energy.

Recent disclosures indicate a shift in how climate-related strategy is communicated. In the latest reporting cycle, several of the banks have reduced the prominence of headline net zero commitments, withdrawing or revising some targets. Where sectoral alignment targets remain, they are often less prominent, and updates on progress appear more limited than in previous disclosures. Even where banks reaffirm commitments and report on their interim sectoral targets, progress against these targets appears to be limited. This shift in narrative seems to reflect a recalibration of how climate-related objectives are positioned within overall corporate strategy, with a greater focus on client-driven outcomes.

The shift in sustainability and decarbonisation narratives, however, does not appear to be mirrored by a comparable change in disclosed climate risk management practices. While climate targets are being withdrawn and revised, recent disclosures continue to describe broadly the same climate risk management practices, tools, methodologies and approaches to assessing client transitions as in previous reporting cycles. This suggests continuity rather than a fundamental change in the underlying analytical frameworks that banks use in these processes.

Approaches to risk management

All the reviewed banks conceptualise climate change as a cross-cutting risk driver that affects traditional risk categories rather than as a standalone risk type. This framing, consistent with international supervisory guidance (BCBS, 2021a), facilitates the integration of climate-related considerations into existing ERM frameworks. Disclosures consistently highlight the potential transmission of climate-related risks through established channels, particularly those of credit, market, liquidity, operational, compliance, reputational and strategic risk.

Several of the banks have taken steps to formalise climate-related risk drivers within internal risk taxonomies and repositories. This involves mapping physical and transition risks to specific risk categories and, in some cases, embedding climate-related factors into risk identification processes and reporting frameworks. Such formalisation represents a progression from earlier, more exploratory approaches, and suggests a degree of institutionalisation of climate-related risk considerations within the core risk management architecture.

In practice, banks' discussions of approaches to risk management are most developed in the context of credit risk, in line with their core lending activities. US G-SIBs describe the development of new tools and methodologies to assess climate-related risks at the counterparty level, including climate-related financial risk scores for credit underwriting, assessments of physical risk exposure, and evaluations of transition readiness. These assessments often rely on a combination of qualitative and quantitative inputs, including sectoral analysis, client disclosures and data from external providers. Some assessments are described as informing internal risk ratings or credit decisions, but not all of these clearly specify the extent of their influence.

Most of the banks refer to reputational risk as an important transmission channel for climate-related risks, particularly in the context of transition risk. Disclosures highlight potential reputational exposures in multiple directions, including the risks associated with financing high-emitting sectors or failing to meet stated climate commitments, as well as concerns related to restricting access to financial services or 'de-banking' certain client groups. This dual framing reflects the sensitivity of climate-related decisions in a changing policy and stakeholder environment. It is unclear whether they will continue to focus on this, given US federal banking agencies' recent moves to eliminate reputational risk from the oversight framework (Federal Reserve Board, 2025; OCC, 2025).

Most of these banks also highlight the importance of sectoral differentiation in managing climate-related risks. Most institutions adopt differentiated approaches across sector portfolios, reflecting variations in exposure to physical and transition risks, as well as differences in data availability and methodological maturity. In some cases, some banks explicitly state that sectors subject to detailed climate risk analysis may differ from those covered by net zero or sustainable finance targets. This supports the idea that banks treat risk management goals and strategic commitments as separate objectives.

While the banks often provide detailed descriptions of how they identify and assess climate-related risks, they provide comparatively little information on how they subsequently manage and mitigate these risks. Disclosures describe the use of client transition assessment frameworks, scorecards and scenario-based tools, but offer limited insight into how these assessments translate into concrete risk management actions. As a result, it is often difficult for external stakeholders such as investors to determine how climate-related risk considerations flow into lending decisions, pricing, portfolio composition and the process of setting risk limits.

Overall, the banks disclose very limited information on the quantitative impact of climate-related risk assessments on their efforts to set risk appetite limits and pricing models. It is often unclear whether this is because of commercial sensitivity or because such risks are not formally integrated into these mechanisms. In either case, the limited transparency in this area makes it challenging to understand the extent to which climate-related risks are incorporated into core financial decision-making processes.

Risk management tools

The reviewed banks generally appear to be building up the capacity of their climate risk management tools. This involves both internal initiatives and the integration of external expertise, including the acquisition of new datasets and third-party vendor solutions, the development of internal modelling capabilities and climate data tools, and the creation of specialised teams and research. In addition, institutions highlight investments in staff training and internal knowledge centres to enhance cross-organisational expertise.

A central area of investment appears to be the development of climate data infrastructure. Several of the banks have invested in proprietary platforms for the collection, management and analysis of climate-related data, sometimes combining internal and client data with that from third parties. Examples of this include data hubs and analytical platforms designed to support both internal risk management and client-facing activities. These investments emphasise the importance of data availability and quality as a key constraint on climate risk analysis, as well as a potential area of competitive differentiation between banks.

Notably, while most US G-SIBs' recent disclosures are characterised by a reduced emphasis on headline net zero commitments, there is limited evidence that they have scaled back their development of climate risk management tools. On the contrary, the banks continue to describe ongoing efforts to consolidate and refine their analytical capabilities and modelling toolkits.

Climate scenario analysis and stress testing play a central role in these toolkits, albeit with considerable variation between banks in their scope, granularity and methodological sophistication. Disclosures indicate differences between the types of scenarios used, the balance between physical and transition risks, and the extent to which stress testing is applied across portfolios. This variation is broadly consistent with findings from supervisory exercises, which have also highlighted differences in

modelling approaches and capabilities across institutions (BoE, 2022; Woods, 2022; Federal Reserve Board, 2024). Banks recognise that these exercises are complex because they reflect both the fundamental challenges of modelling the impact of climate-related risk drivers on economic and financial outcomes and the dynamics of adjustments in the financial sector. Such adjustments include, for instance, the effects of physical risks on both the pricing and availability of insurance in the US, which have clear implications for the risks that banks face (Sastry and Sen, 2025).

The reviewed banks often provide granular descriptions of their scenario design, assumptions and modelling frameworks, but disclose limited information on outcomes. The results the banks do present tend to focus on specific sub-portfolios or illustrative examples rather than comprehensive, portfolio-wide assessments. While more recent disclosures show some increase in the disclosure of quantitative outputs, the absence of consistent, decision-relevant metrics continues to make it difficult to gauge the materiality of climate-related risks.

Methodologically, most of the banks rely on externally developed scenarios and frameworks, such as those produced by the NGFS and the Intergovernmental Panel on Climate Change, often supplemented by internally developed overlays to better capture portfolio-specific characteristics. In addition to scenario-based tools, some of the banks are developing capabilities in more specialised areas, including catastrophe risk modelling, particularly in relation to physical risk exposures. There are relatively limited references to these efforts in disclosures, but such initiatives indicate a shift towards more granular and event-based risk assessment methodologies.

Overall, while the reviewed banks are investing significantly in the development of tools and analytical capabilities, their disclosures suggest that these measures still face challenges related to data and methodological standardisation. Furthermore, while these banks are often forthcoming on the steps they take to identify, assess and measure climate risks, they disclose less about the processes, approaches and tools they use to manage and mitigate such risks. While the banks frequently provide technical details on climate-risk measurement methodologies such as scenario analysis, they do not usually disclose the quantitative outputs of these analytical exercises.

Comparisons between banks' disclosure cycles

As noted in the Introduction, the timing of the review enabled comparisons across two consecutive disclosure cycles – for 2023 and 2024 – between banks that released more than one set of disclosures during the period. The main observations that arise are summarised in Table 1. Generally, the review suggests that while banks' narrative framing of climate issues appears to be shifting away from visible net zero positioning, the underlying climate-risk management architecture continues to evolve and, in several respects, has become more sophisticated. Put differently, while climate-related topics occupy less overall space within recent disclosures, a growing share of that space is dedicated to climate-risk management practices, methodologies and tools.

Table 1. Developments and continuity across the 2024 and 2025 disclosure cycles

Governance	• Governance structures and formal oversight arrangements remained broadly stable. • Governance bodies or committees with explicit ESG or climate-related branding appear to have been renamed or reframed, albeit with no clear indication of substantive mandate changes.
Strategy	• Stronger emphasis on commercial considerations, client service, energy affordability, resilience and energy security, with references to “secure energy access” becoming more prominent. • Climate increasingly framed as one consideration within broader business and client strategies rather than as a standalone agenda. • Increased focus on financing strategic and emerging technologies, including nuclear, geothermal and first-of-a-kind projects. • Approximately half of reviewed banks no longer prominently reference overall net zero targets relating to operational and financed emissions. • Some banks continue to disclose financed emissions metrics without accompanying aggregate emissions reduction targets. • Several banks continue to maintain sectoral emissions intensity reduction targets, but their discussion of such targets is increasingly marginal and reported progress against such targets appears limited. • Disclosures now more explicitly emphasise the idea that climate targets are not intended to restrict financing activities.
Risk management approach	• Core climate-risk management architectures appear to remain broadly stable. • Increased granularity in disclosures relating to the integration of climate considerations into credit underwriting and risk assessment processes, including more nuanced treatment of sectoral and country-level vulnerabilities. • More references to insurance availability and affordability as drivers of climate-risk materiality and transmission mechanisms. • Limited evidence of material rollback in core climate-risk management architectures, governance processes or integration into ERM frameworks. • Increasingly sophisticated and granular treatment of climate-related financial risks.
Risk management tools	• Scenario analysis and stress testing remain a central analytical tool at all banks. • Broad reaffirmation of existing scenario analysis and climate stress testing principles and methodologies. • Increased sophistication of, and continued investment in, data modelling and analytical capabilities. • Some expansion in disclosure of qualitative stress testing outputs and portfolio vulnerabilities, but quantitative disclosures remained limited and inconsistent. • Banks appear to have maintained their methodologies, tools, data infrastructure and analytical capabilities for identifying, assessing and measuring climate-related risks – and in some cases have continued to expand them.

3. Conclusion and next steps

Investors, counterparties and supervisors will need to understand how banks are managing risks and evaluating opportunities if they are to provide market discipline and official oversight of the financial sector. As emphasised, our focus on the steps to manage these risks and opportunities is consistent with a traditional prudential perspective.

From a policy perspective, this type of evaluation of practices at large, sophisticated banks can help identify the leading practices that banks employ to address emerging climate-related risks. Given US supervisors' reduced focus on these risks and greater attention to traditional risk management objectives, such steps are likely to reflect business decisions that are consistent with banks' internal risk appetites and strategic goals. This has policy implications for the development of supervisory risk management guidance and expectations, both for the largest banks and for smaller institutions that might have fewer resources and less internal capacity to develop effective risk management practices on their own. In particular, understanding the range of practices adopted by large, sophisticated banks can help supervisors assess whether climate-related risk management is emerging as a normal component of enterprise risk management. It can also help them identify gaps between risk assessment and concrete risk management action, and the practices that may be relevant for smaller institutions. Understanding the range of practices can also help investors assess both the inherent risk that banks face and the steps they are taking to manage that risk.

One important implication emerging from this review relates to the gap between process-oriented disclosure and decision-useful disclosure. Reviewed banks provide significant detail on the internal methodologies, scenario design, modelling assumptions, analytical tools and internal assessment processes they use to identify, assess, measure and monitor climate-related risks. By contrast, they provide comparatively limited disclosure of the conclusions drawn from these exercises, including the scale and materiality of identified exposures, the vulnerabilities revealed through stress testing and scenario analysis, and the extent to which these findings influence risk appetite, underwriting, pricing and portfolio management decisions. This makes it harder for investors, counterparties and supervisors to assess not only the sophistication of banks' climate-risk capabilities but also the extent to which those capabilities are translating into substantive risk management actions. Policymakers could consider whether such disclosures provide the most effective approach to promoting strong risk management.

This review suggests a need for further work in three main areas:

- **First, it would be helpful to develop objective metrics that could be used to compare banks' approaches with one another.** This could include measures of inputs into climate-related risk management, such as the number of people, amount of expenditure on new data, and development of relationships with external vendors that are involved in the process. While these would be imperfect measures of banks' approaches to risk management, they would help market participants to make informed judgements about the adequacy of these approaches relative to the risks that banks face.
- **Second, there is a need for further study of smaller banks that are more geographically concentrated and likely have fewer resources to devote to incorporating climate-related risk drivers into ERM frameworks,** as this review has covered only the largest US banks. Understanding the practical steps that these smaller banks are taking would provide useful information about their resilience against climate-related risk drivers.
- **Finally, a useful comparison could be made between the evolution of reported practices at these US banks and large banks in other jurisdictions, where the supervisory and regulatory environment has been more stable.** While related research (Fulvi et al., 2026) points to notable cross-jurisdictional differences in the framing of net zero objectives, target-setting and decarbonisation commitments, further work could assess whether there are also differences in the integration of climate-related risk drivers into risk management frameworks.

References

- Bank of England (2019) *Enhancing Banks' and Insurers' Approaches to Managing the Financial Risks from Climate Change*. Supervisory Statement 3/19. 15 April.
- Bank of England (2022) *Results of the 2021 Climate Biennial Exploratory Scenario (CBES)*. 24 May.
- Bank of England (2025) *Enhancing banks' and insurers' approaches to managing climate-related risks*. Supervisory Statement 5/25. December.
- Basel Committee on Banking Supervision [BCBS] (2021a) *Climate-Related Risk Drivers and their Transmission Channels*. 14 April.
- BCBS (2021b) *Climate-Related Financial Risks – Measurement Methodologies*. 14 April.
- BCBS (2022a) *Principles for the Effective Management and Supervision of Climate-related Financial Risks*. 15 June.
- BCBS (2022b) *"Frequently Asked Questions on Climate-related Financial Risks"*. 8 December.
- BCBS (2025) *A Framework for the Voluntary Disclosure of Climate-Related Financial Risks*. 13 June.
- Beltran D, Bensen H, Kvien A, McDevitt E, Sanz M and Uysal P (2023) *What Are Large Banks Doing about Climate Change?*. International Finance Discussion Paper. Washington DC: Board of Governors of the Federal Reserve System.
- Blickle K, Perry E and Santos J (2024) *Do Mortgage Lenders Respond to Flood Risk?* Federal Reserve Bank of New York Staff Report 110.
- Blickle K, Hamerling S, Morgan D (2025) *How Bad are Weather Disasters for Banks?* Federal Reserve Bank of New York Staff Report 990. New York: Federal Reserve Bank of New York.
- Carney M (2015) *Breaking the Tragedy of the Horizon – Climate Change and Financial Stability*. Speech given at Lloyd's of London, 29 September.
- Climate-Related Financial Risk Advisory Committee (2025) *Key Themes from 2023–2024 Climate-Related Financial Risk Advisory Committee Meetings*. External Advisory Committee Report. 15 January.
- Climate Proof and ClimateAligned. *Global Bank Climate Adaptation Assessment 2025*. 13 November.
- De Bandt O, Kuntz LC, Pankratz N, Pegoraro F, Solheim H, Sutton G et al. (2023) *The Effects of Climate Change-Related Risks on Banks: A Literature Review*. Basel Committee on Banking Supervision Working Paper 40.
- Demetriades E and Politsidis P (2025) *Bank Lending to Fossil Fuel Firms*. *Journal of Financial Stability* 76.
- The Economist* (2025) *The Remarkable Rise of 'Greenhushing'*. 29 July.
- Elderson F (2025) *Banks Have Made Good Progress in Managing Climate and Nature Risks – And Must Continue*. Blog post, 11 July.
- European Banking Authority (2025) *Final Report. Guidelines on the Management of Environmental, Social and Governance Risks – Final Report*. Paris: European Banking Authority.
- European Central Bank [ECB] (2020) *Guide on Climate-Related and Environmental Risks: Supervisory Expectations Relating to Risk Management and Disclosure*. Frankfurt: ECB.
- ECB (2022) *2022 Climate Risk Stress Tests*. Frankfurt: ECB.

- ECB (2024) *Supervisory Priorities 2025–27*. Frankfurt: ECB
- ECB (2025) *ECB Imposes Period Penalty Payments on ABANCA for Failing to Sufficiently Identify Climate Risks*. 10 November.
- Federal Deposit Insurance Corporation (2025) *Recission of Principles for Climate-Related Financial Risk Management for Large Financial Institutions*. Supervisory Guidance. Washington DC: Federal Deposit Insurance Corporation.
- Federal Reserve Board (2023) *Principles for Climate-Related Financial Risk Management for Large Financial Institutions*. SR 23–9. Press release, 23 October.
- Federal Reserve Board (2024) *Pilot Climate Scenario Analysis Exercise: Summary of Participants' Risk-Management Practices and Estimates*. Washington DC: Federal Reserve Board.
- Federal Reserve Board (2025) *Federal Reserve Board Announces that Reputational Risk Will No Longer Be a Component of Examination Programs in its Supervision of Banks*. Press release, 23 June.
- Financial Stability Board and Network for Greening the Financial System (2022) *Climate Scenario Analysis by Jurisdiction: Initial Findings and Lessons*. Basel: Financial Stability Board.
- Governors and Heads of Supervision (2025) *Governors and Heads of Supervision Reaffirm Expectation to Implement Basel II and Discuss Work on Financial Impact of Extreme Weather Events*. Press release, 12 May.
- Fulvi C, Smoleńska A, Brochard A and Hajagos-Tóth A (2026) *Banks' transition plan dependencies: from risks to opportunities*. London: Centre for Economic Transition Expertise, London School of Economics and Political Science.
- Kempa K (2026) *Physical Climate Risk and the Pricing of Bank Loans*. *Journal of Environmental Economics and Management* 1,337.
- Net Zero Banking Alliance (2025) *Update from the Net-Zero Banking Alliance*. Press release, August.
- Network for Greening the Financial System [NGFS] (2019) *A Call for Action: Climate Change as a Source of Financial Risk*. Paris: NGFS.
- NGFS (2020) *Guide for Supervisors: Integrating Climate-Related and Environmental Risks into Prudential Supervision*. Paris: NGFS.
- NGFS (2026) *Supervision*. 15 January.
- Nguyen DD, Ongena S, Qi S and Sila V (2022) *Climate Change Risk and the Cost of Mortgage Credit*. *Review of Finance* 26(6).
- Noth F and Schüwer U (2023) *Natural Disasters and Bank Stability: Evidence from the U.S. Financial System*. *Journal of Environmental Economics and Management* 119.
- Office of the Comptroller of the Currency (2025) *Prohibition on Use of Reputation Risk by Regulators: Notice of Proposed Rulemaking*. 7 October.
- Office of the Superintendent of Financial Institutions [OSFI] (2025a) *Climate Risk Management – Sound Business and Financial Practices*. 7 March.
- OSFI (2025b) *Strengthening Climate Risk Financial Resilience: Insights from the Standardized Climate Scenario Exercise*. 11 September.
- Sastry P and Sen I (2025) *Perspectives on Insurance and Climate Risk*. *Journal of Finance*.

- Segal M (2025) [Net Zero Banking Alliance Ceases Operations](#). *ESG Today*. 3 October.
- Smolenska A (2025) Central Bank Supervisory Role in *Central Banking and Sustainability* (Kern A and Grunewald S, eds.). Cambridge: Cambridge University Press, 2026.
- Stiroh K (2025) [The Evolving View of Climate-Related Financial Risks in the US Financial Sector](#). Resources for the Future. Blog post, 15 December.
- Swiss Re Institute (2026) [Natural Catastrophes in 2025: The Persistent Rise of Wildfire and Storm Risk](#). Zurich: Swiss Re Institute.
- Task Force on Climate-Related Financial Disclosures (2017) [Recommendations of the Task Force on Climate Related Financial Disclosures](#). Basel: Financial Stability Board.
- TPI Global Climate Transition Centre (2025) [State of the Banking Transition 2025](#). London: LSE Global School of Sustainability.
- United Nations Environment Programme – Finance Initiative (2025) [Bridging Climate and Credit Risk – Current Approaches and Emerging Trends for Climate-Related Credit Risk Assessment Methodologies – Insights from a Global Survey](#). Nairobi: United Nations Environment Programme.
- Woods S (2022) [Thematic Feedback on the PRA’s Supervision of Climate-Related Financial Risk and Bank of England’s Climate Biennial Exploratory Scenarios Exercise](#). Letter from Sam Woods, 21 October.
-

Banks’ publicly available disclosures studied for this paper

- Bank of America: [Sustainability at Bank of America](#), 30 September 2024.
- Bank of America: [Sustainability at Bank of America](#), 18 December 2025.
- Citigroup: [2023 Citi Climate Report](#), November 2023.
- Citigroup: [2024 Citi Climate Report](#), November 2024.
- Goldman Sachs, [Goldman Sachs 2023 TCFD Report](#), August 2023.
- Goldman Sachs, [Goldman Sachs Sustainability Report](#), December 2025.
- JPMorgan Chase, [Climate Report](#), May 2024.
- JPMorgan Chase, [Sustainability Report](#), 15 October 2025.
- Morgan Stanley, [2024 Sustainability Report](#), November 2025.
- Wells Fargo, [Climate Report](#), August 2024.