Global Research & Risk Solutions

CRISIL
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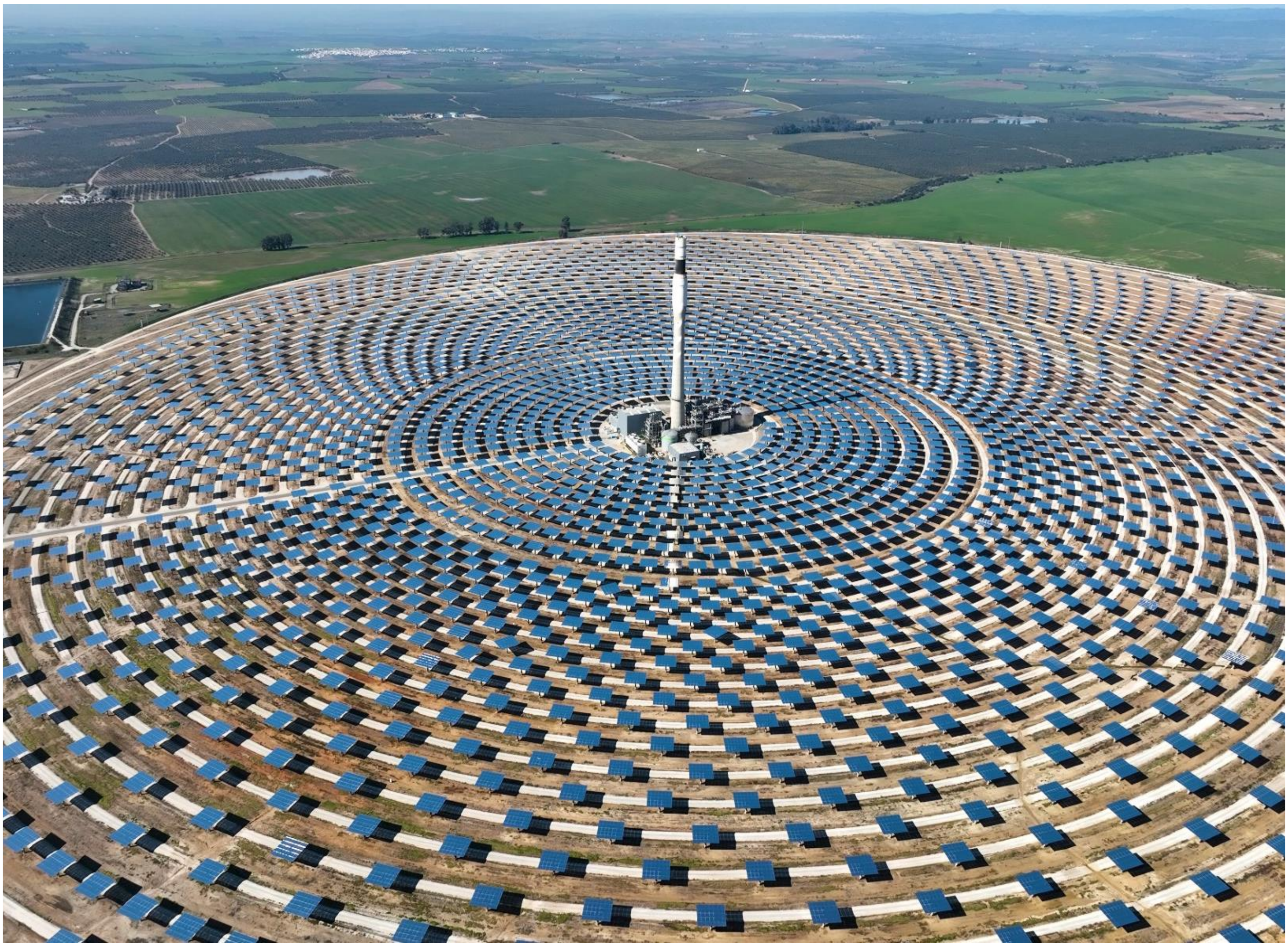
Climate risk regulation **in Asia-Pacific**

Whitepaper | September 2023



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Executive summary

Regulators in the Asia-Pacific (APAC) region have, since 2020, issued guidance on how banks and other financial institutions should adapt their governance framework, strategy, risk management approach, and disclosures to mitigate risks posed by climate change.

In several countries, these have been accompanied by risk stress tests to identify vulnerabilities and assess the preparedness of the sector to climate change.

The APAC countries are at different points in this journey, with guidance varying from statutory requirements to advice on good practice. But the climate risk guidance provided by the respective regulatory authorities also share many common elements.

This whitepaper explores the state of climate risk regulation and the guidance for financial institutions by regulators in seven major APAC countries — Australia, Hong Kong, India, Japan, Malaysia, Singapore and Thailand — and discusses the differences in their regulation of climate risk, as well as similarities.

Introduction

The regulatory landscape across countries is evolving to address climate change challenges to the financial system. Both the physical impacts of a warming world and the operational effects of transitioning to a low carbon economy have created a new set of risks for financial institutions, the effects of which will be dictated by whether and how successful the world is at reducing greenhouse gas (GHG) emissions (see box, *Types of environmental and climate-related risks*).

Indeed, governments and regulators in the APAC region have recognised the need to prepare their financial sectors to address these challenges. Over the past four years, regulators have published guidance on managing climate risk and set new regulatory requirements for financial institutions in their remit to promote the integration of climate risk into their risk management frameworks.

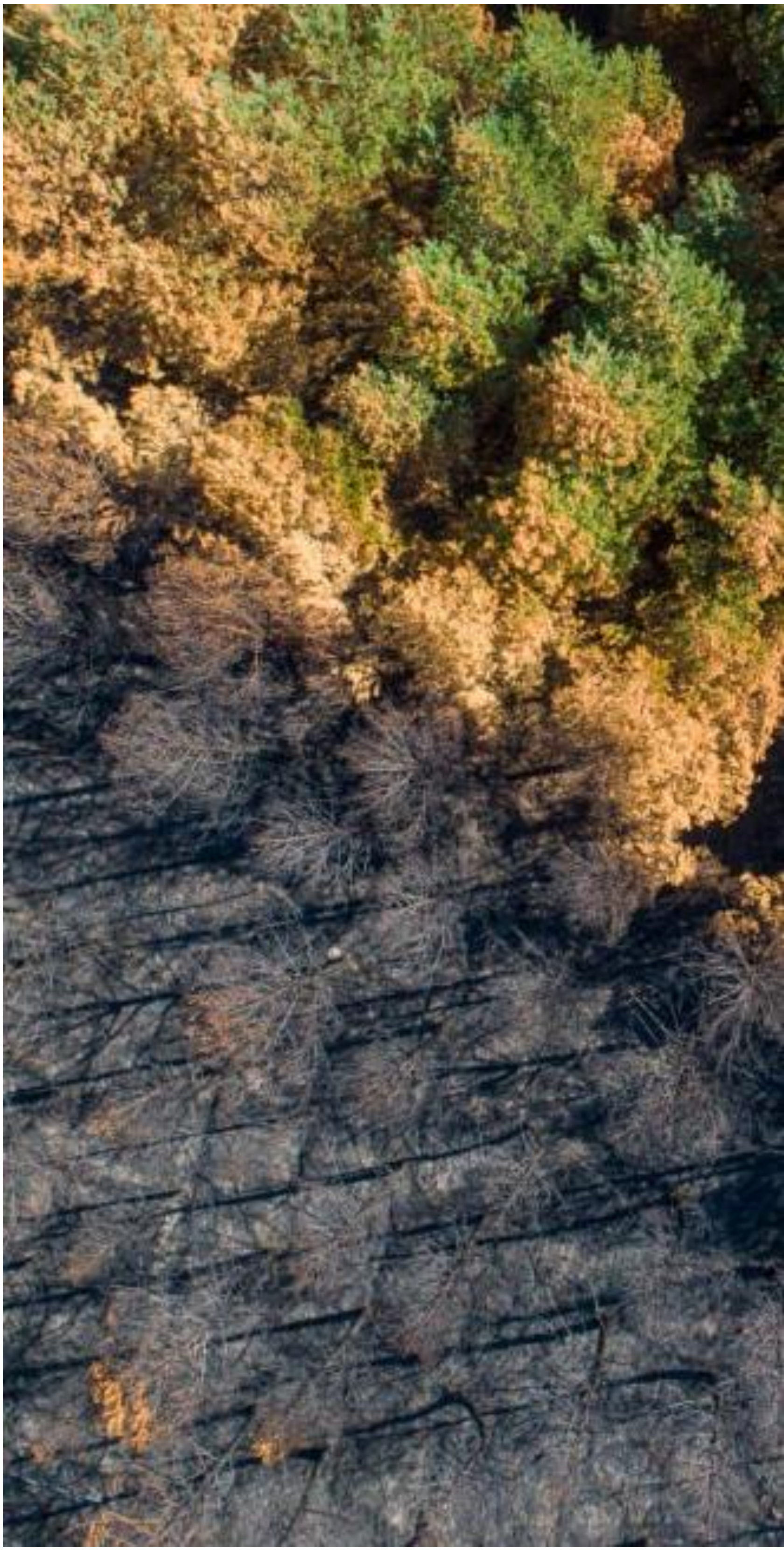
In several of the assessed APAC countries, regulators have also conducted climate risk stress tests to evaluate strengths and weaknesses of the financial institutions to climate change. Even in countries where statutory requirements for managing climate risk have not been enacted, climate risk management is increasingly becoming a topic of prudential interest, as regulators seek to assess the degree to which climate change and its risk and opportunities are embedded in the risk management framework of their country's banking system.

In our survey of climate risk regulation across the seven countries, we found that the regulatory guidance on managing climate-related and environmental risks vary in level of detail as well as in statutory requirements (see box, *Climate risk management requirements by country*).

While several countries have set roadmaps for embedding climate risk into their financial institutions' risk management strategies, others have published recommendations as non-statutory guidance, or emphasised a proportionate implementation of climate risk management reflecting the size of the institution and its exposure to climate risk.

Across the seven countries, however, there is a high degree of commonality in the recommendations for managing climate risk, with similar advice for governance, strategy, risk management and disclosures.

In this paper, we present a consensus view of good climate risk management practices within the APAC region and discuss key differences and similarities in regulation, its implementation and expectation in each country.



Types of environmental and climate-related risks

Climate change is expected to impact financial institutions through two broad factors:

Physical risks,
owing to changes in average precipitation and temperature, as well as through increased probability of extreme weather events

Transition risks,
because of increasing carbon prices, changes in environmental and emissions regulations, introduction of new technologies, and changing consumer sentiment

Physical risks can be further divided into acute or event-driven effects and chronic long-term shifts in climate. The former comprises extreme weather events (floods, wildfires, etc) that may physically damage assets or create temporary disruptions in business operations. The latter includes sea level rise, droughts, or sustained higher temperatures that will have more fundamental and long-lasting effects.

Climate change is expected to increase the frequency and the impact of these risks over time, with the rate of increase dependent on whether and how rapidly carbon emissions are brought under control.

Examples of how climate change can impact "traditional" risks faced by financial institutions

Credit risk

Climate-related impacts may reduce the value of collateral and increase the probability of default owing to damage to property and disruption of business activities (physical), or rising cost of emissions and stranding of assets (transition)

Market risk

Transition to a low carbon economy can result in sudden and sharp decline in the valuation of high-carbon emitting industries, as well as decline in the prices of commodities that are detrimental to the environment

Liquidity risk

Environmental disasters could drive large withdrawal of deposits and draw-down of credit as individuals and businesses divert resources towards recovery in the aftermath

Operational risk

Business operations could be disrupted by climate events affecting branches and offices, while increases in carbon pricing and energy costs may affect operating costs, particularly in energy intensive segments (e.g., data centres)

Legal risk

Litigation is increasingly being used as a tool to hold financial institutions to account for failure to act on climate goals, "greenwashing", and investment decisions in unsustainable industries

Reputational risk

Business practices and investment decisions that are viewed as unsustainable, contrary to stated environmental goals, or greenwashing may lead to reputational damage from a concerned public or interest groups

Strategic risk

Financial institutions that adopt environmentally sustainable business practices may gain greater market share vs. those unable or unwilling to change their approach, owing to changing consumer preferences

Climate risk management requirements by country

The legal and regulatory requirements on financial institutions regarding climate risk management in the seven APAC countries range from advice on good practice to mandatory requirements:

Australia	The Australian Prudential Regulation Authority (APRA) published its guide on management of climate and environmental risks in November 2021, but has not drafted any specific climate risk regulation. However, the Australian government updated its Statement of Expectations for APRA to specifically address climate-related financial risks in June 2023
Hong Kong	The Hong Kong Monetary Authority (HKMA) published guidance in December 2021, and set out a two-year plan to incorporate climate risk into its supervisory process in June 2022, in which climate risk would be a standing item at the HKMA's annual prudential meetings with bank management
India	The Reserve Bank of India (RBI) has published a non-statutory discussion paper setting out guidance on good practice in the management of climate and environmental risks. The central bank announced in February 2023 that regulations for the banking industry are under development, but as of September, had not specified when these will be published
Japan	The Japanese Financial Services Agency (FSA) published guidance in July 2022 to support supervisory dialogues between the FSA and financial institutions to promote better climate risk management practices
Malaysia	The Central Bank of Malaysia (CBM) released its expectations in November 2022. Financial institutions in Malaysia are expected to implement requirements related to climate risk governance, strategy and risk management by end-2023, and scenario analysis, metrics and targets, and disclosures by end-2024
Singapore	The Monetary Authority of Singapore (MAS) published its expectation on climate risk in December 2020, with regulations taking effect in June 2022. An information paper published in May 2022 provided complimentary information on good practices observed among the banks in complying with the regulations
Thailand	The Bank of Thailand (BOT) published its strategy for tackling climate risk and supporting environmental sustainability in August 2022, and communicated its expectations for financial institutions in February 2023

Climate risk management in the APAC region

The seven surveyed APAC countries have each published guidance or regulations relating to climate risk management that address governance responsibilities for climate risk, how financial institutions should incorporate climate risk into their strategy and risk management approaches, and what frameworks they should adopt in disclosures regarding the climate risks faced.

Despite differences in the structure of guidance, and the volume and nature of supporting background information, advice on good practice and case studies, the core requirements for financial institutions are broadly similar across the publications.

Governance

The responsibility for overseeing the management of climate and environmental risks sits with the Board of the financial institution. The Board defines the institution's strategy towards climate change, and sets the overall appetite for climate risk in the institution's risk framework. Roles and responsibilities for enacting policy and day-to-day management of climate risk and opportunities are delegated by the Board to the senior management.

The senior management is responsible for the development and implementation of policies and procedures that would enhance the institution's resilience to physical and transition impacts. The senior management must also define roles and responsibilities of the different businesses and risk functions in supporting the institution's climate-risk management strategy and to ensure that there are sufficient levels of internal resources and capability across the institution for the different areas to effectively perform their role.

Strategy and risk management

The management and mitigation of climate risk should be embedded within the business strategy and the risk appetite framework of a financial institution and incorporated across all three lines of defense (3LOD).

The first step in this process is an assessment of the materiality of climate-related and environmental risks on the institution's business model and operations, considering not just financial risks (e.g., credit risk, market risk, liquidity risk, etc.), but also operational and reputational risks.

Scenario analysis and stress testing are recommended for performing this risk assessment, and should consider risks posed with regard to of both physical and transitional impacts of climate change on the institution's products and customers, viewed across geographies and economic sectors. Given the long-term nature of climate change, this assessment should consider time horizons beyond the typical three- to five-year planning cycle, instead looking at medium (5-10 years) and long (11-30 years) horizons.

Material risks identified in the assessment should be addressed within the institution's risk appetite statement, and strategies to manage and mitigate these risks should be incorporated within the business plan, policies, and targets for risk management. The institution should also assess whether climate risk materially impacts its capital adequacy, e.g., through the Internal Capital Adequacy Assessment Process.

The monitoring and management of climate risks and targets should include quantitative as well as qualitative metrics, as appropriate for the institution's size, business mix, and operational complexity. Quantitative metrics would include direct and indirect GHG emissions, exposure to physical risks, and potential impact of climate change on client and counterparty credit risks, losses, investment returns, and collateral values. Qualitative metrics include the understanding and mitigation strategies of clients and counterparties to which the institution is exposed to with regard to current and future impact of climate change. These metrics should be accompanied by relevant risk limits and triggers for management action, with processes in place to report key risks and progress against targets to the senior management and the Board.

As part of its climate-risk management strategy, the institution should consider engaging with customers that may pose material climate-related risk to foster greater awareness of these risks, encourage customers to provide relevant climate-related disclosures, and support their transition towards more sustainable business practices, e.g. through energy efficiency improvements or GHG emission reduction.

To be sure, assessment of climate risk is an evolving domain, with data, methodologies, and understanding of risks continually improving. Institutions should, therefore, regularly review their strategy and take cognizance of new developments in this area. Climate-related data, metrics, targets and models should be updated regularly to support decision-making, and institutions should consider under what circumstances they will reassess their engagement with customers and counterparties.

Disclosures

Financial institutions should also publicly disclose meaningful information related to their management of climate-related and environmental risks using an approach aligned to internationally accepted regulations and standards, such as the Task Force on Climate-related Financial Disclosures (TCFD) or guidelines of the International Sustainability Standards Board.

These disclosures should be published at least annually and cover governance around climate risks and opportunities, the impact of these on the institution's business, strategy and financial planning, how these risks are identified, assessed and managed, and the metrics and targets used in the process.

Climate risk regulation in each APAC country

Australia

The Australian Prudential Regulation Authority (APRA) published a practice guide, CPG 229, in November 2021, setting out guidance on managing climate risk for financial institutions, with the intention of supporting Australian banks in integrating climate risks into their risk management frameworks. CPG 229 is meant to be read in line with other practice guides and statutory requirements relating to risk management and governance in the financial industry (CPG 220, SPS 220, and CPS 510), but does not create enforceable requirements relating to climate risk.

APRA's guidance is in accordance with the consensus view across the APAC countries in the management of climate risk, recommending that institutions should understand the climate risks they face and how these risks will affect their business model, and that climate and environmental risks should be considered within the institution's risk management framework. But unlike the other APAC countries, CPG 229 does not mention customer engagement on climate risk and mitigation strategies as a tool for climate risk identification and mitigation. On reporting and disclosures, CPG 229 recommends voluntary disclosure of climate risks and their management, and that disclosures follow the TCFD format. But it does not put in place any firm requirements.

Since the release of CPG 229, there have been several indications that expectations on the management of climate risk for Australian financial institutions is increasing. The publication of CPG 229 coincided with the beginning of a climate vulnerability assessment across Australia's leading banks, the results of which were released in the following year. In June of 2023, the Australian government included for the first time risks related to climate change in its statement of expectations for ARPA, and climate change-related risks have been discussed in bulletins and speeches by the Reserve Bank of Australia.

Treasury consultations taking place through 2023 on standardising climate-related financial disclosures give an indication of where enforceable requirements related to climate risk will begin. The Australian government is in the process of developing the country's first national climate risk assessment, which is part of a $28 million budget that would be delivered over two years, from 2023. The risk assessment aims to provide an objective and science-based evidence for decision-making, covering impacts of climate change on many aspects of national importance, including the Australian economy.

Hong Kong

The Hong Kong Monetary Authority (HKMA) published the final version of Supervisory Policy Manual GS-1: Climate Risk Management in December 2021, setting out its expectations for financial institutions to embed climate risk management within the larger risk management framework approach outlined in Supervisory Policy Manual IC-1. Banks were given a 12-month implementation period for GS-1, during which climate risk would become a standing item at the HKMA's annual prudential meetings with bank managers, leading up to a thematic review of climate-related risk governance across financial institutions in 2023.

The requirements of GS-1 vs other APAC countries places greater responsibility on the Boards of the financial institutions to oversee climate-related strategy. To promote effective climate risk management, GS-1 sets expectation that the Board will take an active role in the development and implementation of climate-specific strategies, and foster a risk culture that incorporates climate risk and opportunities into its business activities and decisions. GS-1 tasks the Board and the senior management with ensuring that sufficient resources are allocated to enacting the climate strategy, with suggested enhancements, including those related to building capacity, seeking expert advice, recruiting talent, strengthening data systems and enhancing data collection. Remuneration policies are expected to be consistent with the climate strategy, with the suggested climate risk considerations integrated into the institution's remuneration system.

In defining the climate strategy, the setting of climate goals is not a mandatory requirement of GS-1. But financial institutions have been warned about the risks of delay and inaction.

GS-1 advises that climate risk should be viewed in context of its impact on traditional banking risks (credit, market, liquidity, operational, reputational and strategic), and provides advice on assessing risk at both portfolio and counterparty levels, along with addressing the challenge of incomplete data on climate risk exposure. Banks are also advised to consider along which pathway climate change is progressing (i.e., temperature rise and decarbonization progress), as that will impact how climate risks evolve going forward.

The HKMA does not specify mandatory disclosure requirements within GS-1. However, it recommends that at a minimum, disclosures should follow a framework based on the 11 recommendations of the TCFD. GS-1 further recognises the evolving nature of climate risks as well as disclosure standards, and the burden this places on financial institutions. It advises banks to have a plan on how they will enhance future disclosures, and allows institutions to adopt a 'comply-or-explain' approach that accounts for both materiality of the institution's activities in Hong Kong and its exposure to climate risk.

The HKMA conducted its first climate risk stress test of the banking sector in 2021, with 27 banks, representing 80% of the sector's lending, participating. A second climate risk stress test of the sector was instituted in April 2023.

India

In July 2022, the Reserve Bank of India (RBI) published a Discussion Paper on Climate Risk and Sustainable Finance (Discussion Paper), containing background information, recommendations for good practices, and discussion questions on climate-related and environmental risk for financial institutions. It contained broad guidance on governance, strategy and risk management in accord with the recommendations and requirements of other APAC countries, with additional emphasis on the management of operational risks owing to climate events and recommendations on reducing the environmental impact of a financial institution's operations.

On disclosures, the Discussion Paper advises that financial institutions should strive to apply the 11 recommendations of the TCFD framework, taking into account the unique circumstances of each bank and applying a 'comply-or-explain' approach that accounts for each institution's business model and the materiality of different climate-related risks.

In a speech by the governor of the RBI in February 2023, it was announced that guidelines would be issued to financial institutions on a framework for accepting green deposits, a disclosure framework on climate-related financial risks, and guidance on climate scenario analysis and stress testing, although no date was set for their publication.

The RBI has not conducted a bottom-up stress testing exercise for Indian banks. However, a top-down assessment of climate-related vulnerabilities formed a part of the Report on Currency and Finance 2022–23, published in May. The report details the methodology and framework requirement for Indian banks in assessing the climate risk in their portfolios, including results from climate stress testing and provides assessment on transition risk and transmission channels of climate shocks to the Indian financial sector.

Japan

The Japanese Financial Services Agency (FSA) released the discussion paper 'Supervisory Guidance on Climate-related Risk Management and Client Engagement' (Supervisory Guidance) in July 2022, presenting the basic approach for supervision of financial institutions in climate change. Unlike similar documents from other APAC countries, the Supervisory Guidance is intended to be a reference document to support financial institutions in establishing better practices, and therefore contains a wealth of background information, supporting details, and case studies related to climate risk management. Despite these stylistic differences, the regulatory expectations on governance, strategy, and risk management are similar to those of other APAC countries as set out in the consensus view. No specific reporting frameworks are required for disclosures; however, the FSA's expectations are only that information provided to stakeholders be useful and accurate, with examples of such information included in the Supervisory Guidance.

Where the Supervisory Guidance differs from other APAC countries is in the emphasis placed on supporting clients in their responses to climate change as part of the larger goal of achieving carbon neutrality. Extensive advice is provided on assessing both the risk and opportunity for clients in different industry sectors, and in the development of support measures for aiding clients in addressing climate change.

In August 2022, the FSA and the Bank of Japan (BoJ) jointly published the results of a climate stress test exercise conducted with three of Japan's largest banks using a bottom-up approach and based on three of the NGFS scenarios. No plans have been announced to extend these stress tests to other Japanese banks at this time. However, in its TCFD disclosures released in May 2023[1], the BoJ has stated that it will encourage financial institutions to develop their climate scenario analysis in line with their size and characteristics.

Malaysia

The Central Bank of Malaysia (CBM) (also known as Bank Negara Malaysia) published its expectations for financial institutions regarding management of climate risk in November 2022. The Policy Document on Climate Risk Management and Scenario Analysis (Policy Document) sets out 14 principles for Malaysian financial institutions to follow in integrating climate risk into their risk management framework, allowing a two-year staged transition period for full implementation. Financial institutions are expected to comply with requirements for governance, strategy, risk appetite and risk management by the end of 2023 and with requirements related to scenario analysis, metrics and targets and disclosure by the end of 2024. The principles within the Policy Document are closely aligned with the consensus view of climate risk management, with requirements for integrating climate risk considerations into the banks' existing risk management framework and consider how climate-related risks impact other major risk types.

Although Malaysia has not yet conducted a comprehensive climate stress test exercise for the banking sector, a discussion paper released in 2022 sets out a proposed framework for an industry-wide climate risk stress test in 2024.

The Malaysian Joint Committee on Climate Change (JC3) had previously published guidance on applying the TCFD recommendations to disclosures[2], setting out both a 'basic' and a 'stretch' version, reflecting increasing levels of detail. Principle 14 of the policy document has made the 'basic' TCFD-aligned disclosure

[1] Climate Change Initiatives: Disclosure Based on TCFD Recommendations
[2] TCFD Application Guide for Malaysian Financial Institutions

recommendations mandatory from 2024 while setting an expectation that financial institutions will strive towards the more comprehensive 'stretch' recommendations in the JC3 guidance.

Singapore

In December 2020, the Monetary Authority of Singapore (MAS) released separate guidelines for banks, insurers and asset managers setting out expectations around governance, risk management, and disclosure of climate-related and environmental risks that would take effect in June 2022. The Guidelines on Environmental Risk Management for Banks (Guidelines) align very closely with the consensus view of climate risk management across the APAC countries. In the guidelines, the importance of capacity building to ensure sufficient expertise within the bank for the timely and effective management of climate risks has received special mention. The Guidelines also include, under the heading of risk identification and assessment, an expectation that banks use an enhanced due diligence when managing transactions within sectors with high environmental risk, including review of transactions by personnel with specific environmental risk expertise and site visits to gather additional information. Regarding disclosures, the guidelines set an expectation that banks will follow well-regarded international reporting frameworks such as the TCFD recommendations.

In May 2022, the MAS published information papers for each of the respective financial industries, providing an overview of progress, setting out good practices, and highlighting where gaps remained. The Information Paper on Environmental Risk Management – Banks (Information Paper) highlighted the progress that had been made in embedding climate risk into governance, strategy, and risk management. Key challenges faced by Singapore banks, however, are lack of readily available, reliable, and comparable data on environmental risks, robust methodologies for quantitative estimation of the impact of climate risks, and suitable numbers of staff with expertise in environmental risk management. While progress had been made in incorporating climate into credit and reputational risk, less had been done on market, liquidity, and legal and compliance risks.

In 2022, the MAS conducted a granular climate risk stress test based on NGF scenarios with several of Singapore's key banks as part of the annual Financial Stability Review. Although the results were broadly similar to stress tests carried out in other jurisdictions, the exercise highlighted that banks' abilities to quantify climate risk were still in an early stage of development, with scope for further refinement.

Thailand

In February 2023, the Bank of Thailand (BOT) released the Policy Statement of the Bank of Thailand on Internalizing Environmental and Climate Change Aspects into Financial Institution Business (Policy Statement), setting out its expectations for banks on assessing the risks and opportunities arising from climate change. Guidelines for asset managers were published separately by the Security and Exchange Commission of Thailand (SEC) in January 2023.

As relative latecomers to developing policy and guidance related to climate and environmental risks, the BOT's Policy Statement follows its neighbours in setting expectations around governance, strategy, risk management and disclosures. The BOT has stated that starting 2024, it will begin assessing the application of these policies by financial institutions, beginning with a self-assessment exercise.

In its paper titled 'Directional Paper on Transitioning towards Environmental Sustainability Under the New Thai Financial Landscape' published in August 2022, the BOT set out its plans for managing climate change in the financial sector, including the assessment of financial institutions' progress on environment-related management in late 2023, the inclusion of environment-related factors in its overall evaluation of financial institutions by the end of 2024, and climate risk scenario analysis and stress testing that would extend to all commercial banks by 2024.

Conclusion

The seven APAC countries we have surveyed have taken a sufficiently similar approach in their guidance and expectations to financial institutions that a consensus view of risk management can be drafted for the APAC region. However, not all APAC countries require that the institutions they implement climate risk management in their overall risk management framework. This is reflected in the tone of each publication, the level of detail in the guidance, and the examples and case studies included.

As concerns grow about the effects of climate change and the preparedness of financial institutions for both, physical and transition impacts of a warming world, we can expect those countries that have not yet imposed statutory requirements on financial institutions will soon require them to take a more active role in mitigating their climate risk exposure.

Climate change impact assessment and its integration within the banking sector's risk management is in early stages of development with evolving regulatory expectations. Aligning banks to the regulatory framework would require increased investments and capacity building to tackle the existing gaps in a meaningful way. This could happen through a concerted push towards technology, data, methodology development and integration within existing frameworks (such as credit risk and model risk), and substantial development of infrastructure and skilled personnel under this niche area of expertise.

Summary of regulations

Country (regulator)	Regulations	Description	Launch date	Status
Australia (APRA)	CPG 229 Climate Change Financial Risks	Good practice guidance on managing climate risk in financial institutions	November 2021	Regulatory advice, but not mandatory
Hong Kong (HKMA)	GS-1: Climate Risk Management	Regulatory expectations for embedding climate risk into risk management framework	December 2021	Implemented on a proportional basis as of December 2022
India (RBI)	Discussion Paper on Climate Risk and Sustainable Finance	Good practice guidance and recommendations, with discussion questions for financial institutions related to climate-related risks	July 2022	Regulatory advice, but not mandatory. 'Comply-or-explain' approach to disclosures
Japan (FSA)	Supervisory Guidance on Climate-related Risk Management and Client Engagement	A reference document on good practices, including background information, examples, and case studies.	July 2022	The FSA encourages institutions to address climate risk, but has stated the guidance will not form a supervisory 'checklist' of requirements
Malaysia (CBM)	Climate Risk Management and Scenario Analysis	A policy document containing 14 principles for financial institutions to follow in integrating climate risk into their risk management framework	November 2022	Partial compliance required by end-2023 and full compliance by end-2024
Singapore (MAS)	Guidelines on Environmental Risk Management	Separate guidelines on managing climate risk issued for banks, insurers and asset managers	December 2020	Implementation required as of June 2022
Thailand (BOT)	Policy Statement of the Bank of Thailand on Internalizing Environmental and Climate Change Aspects into Financial Institution Business	Policy statement containing requirements for managing climate risk, with accompanying questions and answers on BOT's expectations	February 2023	The BOT will begin assessing the application of these policies by financial institutions in 2024

How CRISIL can help financial institutions

CRISIL can assist financial institutions in addressing regulatory and business challenges pertaining to climate risk and ESG-related models, with its extensive experience in front office, risk management and change management functions of top-tier financial institutions. Our key offerings are:

1 Regulatory self-assessment, gap analysis and remediation

CRISIL can help financial institutions in completing self-assessments against current regulatory requirements (SR11-7, PRA SS1/23, EGIM, etc.), gap identification/assessment and the formulation of a roadmap for gap remediation. This includes addressing gaps highlighted by regulators or internal audit.

2 Independent validation of climate risk models and associated controls

CRISIL can assist financial institutions with independent validation of climate risk models and associated controls, including:

1. Critical evaluation of strategy documentation, including role and implementation of climate risk and ESG models and metrics
2. Evaluation of test results to validate identified assumptions and limitations
3. Independent assessment and challenge of the conceptual soundness of the models chosen
4. Testing the conceptual soundness, design, and effectiveness of controls
5. Completion of validation documentation as per regulatory guidelines

3 Governance, risk management and approval process for climate risk models

CRISIL can assist financial institutions in defining and embedding robust governance and oversight arrangements for climate risk models, including:

1. Defining, monitoring, and overseeing execution of model risk policies and procedures across the first and second lines of defence
2. Risk management process workflow re-engineering, design, implementation, and documentation
3. Defining a process for the approval and decommissioning of climate risk models
4. Assisting in obtaining Board approvals for climate risk and ESG governance framework
5. Defining a risk appetite framework for climate risk and ESG, covering existing and emergent risks; ensuring consistency with the firm’s risk appetite and governance framework
6. Identifying, assessing and reporting of risks from the climate risk and ESG monitoring architecture
7. Assisting the risk management function in formulation and execution of risk mitigation plans
8. Helping bridge the climate risk and ESG skills gap in the governance teams

4 Model development and implementation testing

CRISIL can help financial institutions in addressing various challenges in climate risk model development and implementation testing, including:

1. Implementation and enhancement of source code
2. Execution of key functions, controls, quality assurance, and capacity testing
3. Backtesting and ongoing performance monitoring
4. Implementation of parameter-sensitivity analysis
5. Identification, assessment and reporting of risks based on the risk architecture
6. Programme/project management, business analysis
7. User acceptance testing support covering regulatory/business change

5 Model inventory and documentation

CRISIL can help financial institutions in enhancing the completeness of their climate risk model inventory and documentation to ensure that it stands the test of regulatory scrutiny, through:

1. Documentation uplift support (methodology, process, and policy/procedure documentation) as per regulatory and internal standards
2. Establishing a single comprehensive inventory of climate risk and ESG algorithms, associated controls and documentation
3. Establishing minimum documentation standards in line with regulatory guidelines
4. Capturing data sources, inputs, output, design, and specifications
5. Defining and enhancing documentation covering climate risk and ESG methodologies and model uses (including credit risk, stress testing, financed emissions, Net Zero, and scenario analysis), associated controls and climate risk architecture

Regulation references

Australia

- Australian Prudential Regulation Authority (https://www.apra.gov.au/)

Hong Kong

- Hong Kong Monetary Authority (https://www.hkma.gov.hk/eng)

India

- Reserve Bank of India (https://rbi.org.in/)

Japan

- Financial Services Agency (https://www.fsa.go.jp/en/)
- Bank of Japan (https://www.boj.or.jp/en/)

Malaysia

- Bank Negara Malaysia (https://www.bnm.gov.my/)

Singapore

- Monetary Authority of Singapore (https://www.mas.gov.sg/)

Thailand

- Bank of Thailand (https://www.bot.or.th/en/home.html)

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