Climate Risk Management

The Hong Kong Monetary Authority ("HKMA") released the Supervisory Policy Manual ("SPM") on Climate Risk Management ("GS-1") on 30 December 2021. GS-1 provides guidance to authorised institutions ("AIs") on the key elements of climate-related risk management and sets out the HKMA's approach and expectations for reviewing how AIs manage climate-related risks.

KPMG can support banks in meeting the new requirements, including embedding climate considerations throughout their strategy formulation processes, incorporating climate-related risks into their risk management frameworks, and stress testing to ensure the effective management of inherent risks and the financial impact associated with climate risks.

Mainland China | Hong Kong (SAR), China

- CBIRC promotes the High-quality Development of the Banking and Insurance Industry — **JANUARY 2020** (Mainland China)
- HKMA White Paper on Green & Sustainable Banking — **JUNE 2020** (Hong Kong (SAR), China)
- PBOC Pilot Climate Stress Test — **2021** (Mainland China)
- HKMA Pilot Climate Risk Stress Test — **2021** (Hong Kong (SAR), China)
- GS-1 Climate Risk Management Consultation — **JULY 2021** (Hong Kong (SAR), China)
- GS-1 Climate Risk Management Guidance published — **DECEMBER 2021** (Hong Kong (SAR), China)

HKMA's Expectations

1. For all locally incorporated AIs, GS-1 requirements to be applied on a solo-entity basis and, where applicable, on a consolidated basis covering their subsidiaries.
2. For international banking groups, any group or regional processes that are leveraged should be assessed to ensure that they are appropriate for local circumstances.
3. The HKMA will adopt a proportionate approach in its assessment and allow a 12-month implementation period for the requirements.

The following four pillars provide guidance to AIs on the key elements of climate-related risk management:

4 Pillars

01 GOVERNANCE AND OVERVIEW

- Define responsibilities of the board and senior management
- Set the risk appetite statement (**RAS**), climate goal and actions

02 STRATEGY

- Perform strategic assessment on internal & external factors
- Formulate strategy along with stakeholder engagement
- **Strategy Implementation**: Effective use of resources by implementing robust polices and organisational structure

03 RISK MANAGEMENT

- Conduct risk identification and measurement at both the portfolio and counterparty level
- Develop **climate-focused scenario analysis** including stress testing
- Monitor and report climate risk

04 DISCLOSURE

- Disclose information aligned with the **TCFD** recommendations
- **Prepare the first climate-related disclosures no later than mid-2023**
- Make disclosures on an annual basis at minimum, under a "comply or explain" approach

Range of Practices

"Climate change is one of the major risks threatening the well-being of mankind. At the same time, climate change is increasingly recognised as a source of financial risks for financial institutions and corporates. This will potentially trigger a radical shift in economic activities and resource allocation and hence has far-reaching implications for all sectors of the economy and financial markets around the world."

HKMA SPM GS-1 Climate Risk Management

Governance and Strategy

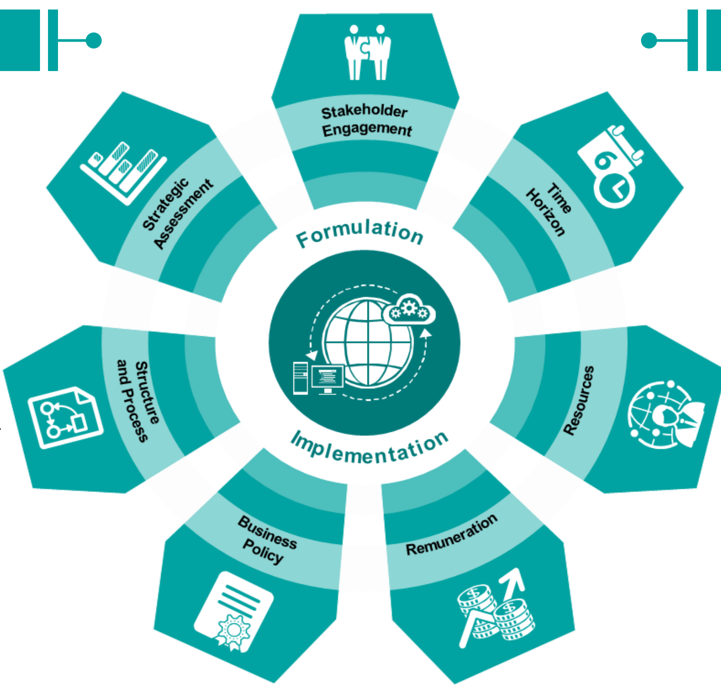
Climate risk has complex interlinkages across conventional risk types and can affect all of banks' existing financial and non-financial risks. For that reason, climate risk management must run across the business, irrespective to how banks' internal structures are organised. The starting point for this process is sound risk governance and an adequate risk strategy.

Accountability for ensuring climate risk is managed consistently with the risk framework approved by the Board			Confirmation of the effectiveness of the risk framework and underlying climate risk and controls
The Board and Senior Management set the tone from the top and cascade accountability for climate risk management throughout the firm	Role of the Board		Board authorities
	Senior Management		Risk Appetite Framework ("RAF") with specific climate risk approach
Expresses the level of climate risk the bank is willing to accept in delivering the business plan	Risk, tolerance and key control limits		Delegated Executive Authorities
	Governance Frameworks		
Group Policy Framework and risk policies must include climate risk issues	Policy framework	Risk governance	Outlines the governance arrangements which articulate the enterprise-wide approach to climate risk issues
Categorisation and definition of the sustainability risks covering environmental and climate, social and governance issues	Risk identification, measurement and control	Risk monitoring, aggregation and reporting	A suite of climate risk metrics and information to support effective decision-making at all levels (invest & loans)
Ensure Lines 1, 2 and 3 are aware of their risk responsibilities to the firm	"Three Lines of Defence" Model	Culture	Outlines the mandate and responsibilities of the Climate Risk Oversight function
Makes risk management a core element of our culture by considering climate risk matters	Culture	Resource and capabilities	Skilled and motivated resources with the right values able to support the business and risk management
Impact of climate risk spreads across all other risks categories	Operational Risk; Credit Risk; Market Risk	Liquidity Risk; Conduct Risk; + other principal risks	Risk-category specific sub-frameworks covering climate risk matters

Strategy

Strategy Formulation

- AIs to complete a strategic assessment process considering relevant internal and external factors, including an "as-is" assessment.
- Engaging relevant internal and external stakeholders.
- Incorporating impacts of climate change over a longer time horizons into business planning to cater for the relatively longer realisation periods of climate-related risks.



Strategy Implementation

- Organisational structure and business processes reviewed and enhanced (e.g. inter-departmental working groups).
- AI's high-level strategic goals should be reflected in business policy (e.g. lending assessments and pricing).
- Remuneration policy and practices should be consistent with the AI's climate strategy.
- Ensure sufficient allocation of resources including; people, data, systems, etc.

Risk Management

To effectively manage climate risk, banks need to quantify climate factors across the business and put in place the tools and processes needed to take advantage of them effectively. The following five principles will support this transformation:

Governance

- Framework to be defined and supported with policies and procedures
- "Three lines of defense" model to be employed and R&R defined
- AI's expected to manage climate related risks in line with HKMA SPM IC-1 requirements

Risk Identification & Measurement

- Comprehensive assessment required including quantifiable and non-quantifiable risks, e.g. Credit Risk, Market Risk, Liquidity Risk, Operational and Legal Risk, Reputational Risk, Strategic Risk, etc.
- Identification of climate-related risks and how these transmit into the core risk types
- Implement portfolio (e.g. high risk sectors/ geographical locations) and counterparty level assessments
- Assess whether their facilities, operations and major outsourced arrangements are prone to physical risk

Scenario Analysis and Stress Testing

- Climate scenario analysis including stress testing should be used to assess vulnerability
- The methodologies and tools should be continuously reviewed and enhanced over time
- Multiple scenarios, covering both physical risk and transition risks
- Use both shorter and long-term horizons
- All major exposures that are being/ will be affected by climate change should be covered using both quantitative and qualitative assessments
- Model risk management should be considered

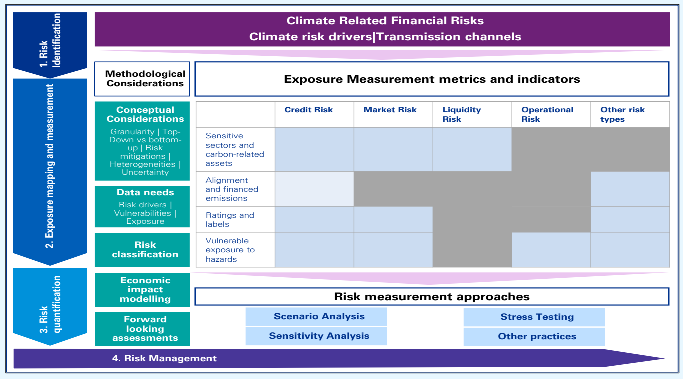
Monitoring and Reporting

- Monitor and report climate-related exposures to ensure management within risk appetite
- Quantitative and qualitative tools used to provide early warning indicators
- Portfolio monitoring should at least cover exposure to certain sectors (transition risk) and collateral (physical risk)
- Maintaining a monitoring list of counterparties with high risk profile
- Timely and regular climate risk reports to Board and senior management

Control and Mitigation

- Sector-level control measures to be implemented, e.g. lending thresholds, tilting policy
- Stringent lending terms for higher risk counterparties, e.g. lower LTV, reduced tenors, or climate-related factors in pricing
- Supporting clients/ borrowers in their transition
- Business continuity in case of extreme weather events

KPMG conceptualised Climate Risk Management Framework



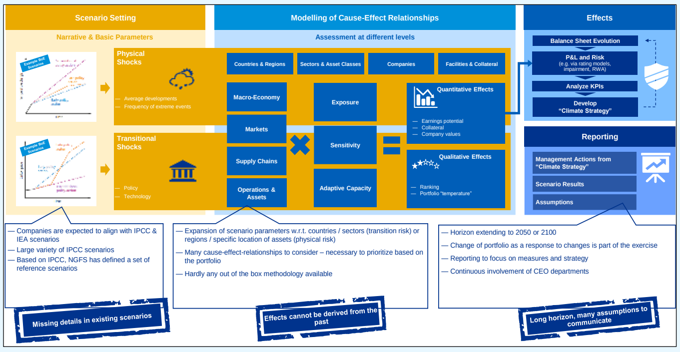
KPMG approach to setting metrics for climate risk in AIs RAS

Example: Long term scenario analysis to project existing metrics

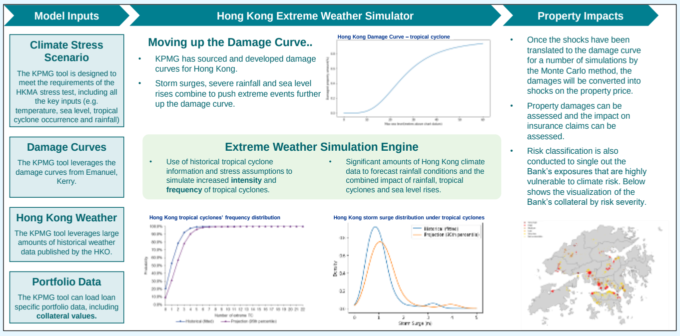
Using scenario analysis to understand the projection of metrics that are used to measure and monitor risk appetite under set scenarios. The projected metrics can guide pre-emptive actions.

Metric	Appetite	Escalation	Current	Scenario 1-2050	Scenario 2-2050	Scenario 3-2050
% ECL from Vulnerable sectors	15%	10%	12.5%	8%	9%	18%

KPMG approach to Climate Risk Assessment



KPMG Model for Stress Testing



Climate Risk Stress Test

HKMA launched a pilot climate risk stress test (CRST) exercise in January 2021 to assess the potential impact of climate change on the Hong Kong banking sector. Below is a summary of the results HKMA published on 30 December 2021:

27 **banks covering**

80% **of HK total lending**

Twenty-seven banks, including 20 major retail banks and seven branches of international banking groups participated in the exercise. They together accounted for 80% of the sector's total lending, providing meaningful insight in the test result.

Overall Assessment Result

*"Climate risks can give rise to **significant adverse impacts** on the banks' profitability, capital positions and operations. Notwithstanding the significant potential impacts of climate change, the Hong Kong banking sector remains resilient to climate-related shocks given the strong capital buffers built up over the years."*

HKMA Pilot Banking Sector Climate Risk Stress Test (December 2021)

Scenarios Covered

Physical Risk

Focuses on the projected climate situation of Hong Kong in the middle of the 21st century, with assumptions around potential increases in temperature and rises in sea level.

Developed based on the climate projections of the Hong Kong Observatory under a scenario of high greenhouse gas concentration.

Assessment

Physical risks will be manifested in Hong Kong through two major types of climate hazards, namely typhoons and floods, causing devaluation of properties and business disruptions.

The vulnerabilities of residential mortgages and other property-related lending in Hong Kong and the potential operational losses associated with climate events are the key focus of the assessment.

The banks project that the ECL of their property-related lending in Hong Kong will rise sharply under the physical risk scenario. **The 1-year ECL of those loans are projected to surge 25 times.**

The banks also anticipate a **higher level of operational losses arising from damages to office premises and disruptions to business operations**.

Limitation

Estimation of devaluation of properties: Only includes physical damages to properties in estimating the devaluation of properties. Changes in market perception of property prices are less considered. Some approaches used for estimating the physical damages are based on data of historical climate events and may not sufficiently capture the severity of damages caused by unprecedented climate events.

Economic impact of climate hazards: Does not incorporate the broader economic impact of the intensified climate hazards into the physical risk assessment. Such economic shocks can affect the general repayment ability of borrowers.

Transition Risk

Five-year impact between 2031 and 2035 under the "disorderly transition" scenario.

30-year impact between 2021 and 2050 under the "orderly transition" scenario, for domestic systemically important authorised institutions (D-SIBs) only.

Both scenarios assessed the potential transition impact on exposures to the *property development sector* and six high-emitting industries, including *energy, utility, metals and mining, transportation, construction and manufacturing*.

Assessment

Transition risk will manifest itself in terms of increased credit risk exposure of the banks, particularly conspicuous in the "disorderly transition" scenario.

The **annualised credit cost of lending to the high emitting industries under this scenario will rise by three times** to reach 0.3% as compared to the level in 2019.

Exposures to the metals and mining and the transportation sectors are most severely affected. Higher credit cost and increase in credit risk-weighted assets of the assessed exposures lead to a notable deterioration in the banks' capital positions. **D-SIBs' capital adequacy ratios, will on average drop by 3 percentage points over the five-year horizon** under the "disorderly transition" scenario.

Limitation

Second-order impact: Focused on the direct impact of transition risk on their exposures to the seven prescribed industries. The second-order impact, such as the spill-over effect from the high-emitting industries to other sectors along the value chains, has not been fully evaluated.

Counterparty level assessment: Use of extrapolation is noted. The projected transition risk impact on exposures which are not subject to the counterparty-level assessment, especially those to the small and medium-sized corporates, can be highly sensitive to the assumptions adopted for the extrapolation.

Capability Building of Banks

Although banks have substantially strengthened their capabilities to measure and assess climate risks, major gaps remain, including the following:

- Inadequacy of granular and reliable data
- Lack of widely accepted standards for classifying and identifying climate risk exposures
- Uncertain timing of materialisation of climate risks and the lack of historical events
- Lack of well-accepted, proven methodologies for capturing unprecedented climate change scenarios

Next Steps

- The HKMA has already stated their intention to **run this exercise again in two years.** Banks falling significantly short of the modelling expectations need to **start work on bridging the gaps now**
- Banks should assess lessons learned and gaps that need to be closed ahead of the next exercise
- They should also integrate climate risk stress tests into wider climate risk management framework
- Further, banks should design a roadmap for how they can enhance climate related data collection and quality

Disclosure

Climate-related disclosure is an important avenue for different stakeholders of an AI (e.g. regulators, investors, customers and depositors) to understand relevant risks faced by it and its approach to addressing such issues.

- The HKMA expects AIs to make their first disclosures no later than mid-2023, with a view to aligning disclosures of AIs with the TCFD framework no later than 2025.
- AIs should make such disclosure at least on an annual basis.

TCFD's 11 Recommendations

GOVERNANCE

1 Describe the board's oversight of climate–related risks and opportunities.

2 Describe management's role in assessing and managing climate-related risks and opportunities.

STRATEGY

3 Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.

4 Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning.

5 Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios.

RISK MANAGEMENT

6 Describe the organisation's processes for identifying and assessing climate-related risks.

7 Describe the organisation's processes for managing climate-related risks.

8 Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

METRICS AND TARGETS

9 Disclose the metrics used by the organisation to assess climate-related risks and opportunities where such information in line with its strategy and risk management process.

10 Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas emission, and the relevant risks.

11 Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

About the TCFD and its recommendations

The Financial Stability Board (FSB) founded the Task Force on Climate-related Financial Disclosures (TCFD) at the request of G20 finance ministers. Its purpose is to improve business and financial sector transparency on the financial risks and opportunities of climate change.

The TCFD recommendations, released in 2017, focus specifically on business disclosure of how climate change affects financial performance now and in the future. They do not address disclosure of how a company may, or may not, be contributing to climate change.

The recommendations can be summarised as follows:

GOVERNANCE: Companies should disclose the governance structures, oversight and management processes in place to manage climate-related financial risks and opportunities.

STRATEGY: Companies should disclose the actual and potential risks, and opportunities, of climate change on its business, strategy and financial planning. Scenario analysis should be used to test the resilience of the company's strategy under various climate scenarios.

RISK MANAGEMENT: Companies should disclose how they identify, assess and manage climate-related financial risks.

METRICS AND TARGETS: Companies should disclose the metrics and targets they use to assess and manage climate-related financial risks and opportunities.

Further information can be found at: www.fsb-tcfd.org

How KPMG can help you

KPMG provides bespoke services to help clients address climate-related financial risks. Our support covers the following areas:

Organisational & Business Strategy

Climate change brings both risks and opportunities for banks, and will require significant collaboration across the organisation going beyond the Supervisory Policy Manual (SPM) requirements. KPMG can provide recommendations on how to develop a robust climate strategy that will enable the bank to support economic activities of their clients as we transition to a low-carbon economy.

Effective Governance

KPMG specialists can work with Board and senior management in order to implement a robust climate risk-related governance and strategy at the bank level. Further, supporting AIs in developing policies and procedures as per HKMA requirements.

Map climate-related risks

KPMG specialists can help you to understand your exposure both to the physical effects of climate change and to the likely regulatory and economic impacts of the shift to a low-carbon economy. We can identify the areas of your business, as well as the countries where your operations are located, which are - or will be - most affected by climate change.

Use scenario analysis to assess resilience

In line with the HKMA recommendations, KPMG can help you understand how climate-related risks and opportunities could affect your business in a variety of regulatory, economic and climate scenarios. We can explore what these scenarios would mean for your business in the short, medium and long term and develop tools and procedures to assess and quantify the potential financial impacts.

Assess and improve readiness for reporting

Using advanced tools, KPMG professionals can evaluate the extent to which your business's processes, methods and disclosures currently fulfil the TCFD recommendations. We can benchmark your company's performance against industry best practice to show where you stand in the market.

Manage and report on risks

KPMG can help you define appropriate data collection systems, metrics and targets to monitor, manage, and report on climate-related risks in line with the HKMA (TCFD) recommendations. We can provide advice on how best to disclose your climate-related risks in your financial disclosures and provide good practice examples to guide your reporting.

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