



Monetary Authority of Singapore

**GUIDELINES ON
ENVIRONMENTAL RISK MANAGEMENT
(BANKS)**

December 2020

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1 INTRODUCTION

1.1 These Guidelines aim to enhance the banking sector's resilience to and management of environmental risk through setting out sound risk management practices. The Guidelines apply to all banks, merchant banks and finance companies in Singapore (collectively referred to as "banks"). The Guidelines are applicable to banks extending credit to corporate customers, underwriting capital market transactions, and other activities that expose banks to material environmental risk¹.

1.2 The Guidelines apply on a group basis for locally-incorporated banks². Banks that are branches or subsidiaries of global groups may take guidance from their Group's environmental risk management frameworks, as long as the frameworks meet the expectations set out in the Guidelines.

1.3 MAS recognises that the scale, scope and business models of banks can be different. MAS expects a bank's approach to managing and disclosing environmental risk to mature as the methodologies for assessing, monitoring and reporting such risk evolve. A bank should implement these Guidelines in a way that is commensurate with the size and nature of its activities as well as its risk profile.

1.4 MAS will update these Guidelines as appropriate to reflect the evolving nature and maturity of risk management practices. The examples of environmental risk management practices featured in these Guidelines are meant to be illustrative, and are neither prescriptive nor exhaustive.

2 SCOPE

2.1 Environmental risk arises from the potential adverse impact of changes in the environment on economic activities and human well-being³. Environmental issues that are of concern include climate change, loss of biodiversity, pollution and changes in land use. These

¹ Banks with material investment activities should refer to the relevant sections of the Guidelines on Environmental Risk Management (Asset Managers), for sound practices on the management of environmental risk with respect to investments. These Guidelines will generally be applicable where banks have discretionary authority over the investments. Where a bank appoints another entity to undertake investment management, the bank still retains overall responsibility for environmental risk management. The bank should convey its expectations on environmental risk management to the entity and monitor the entity's compliance with the expectations.

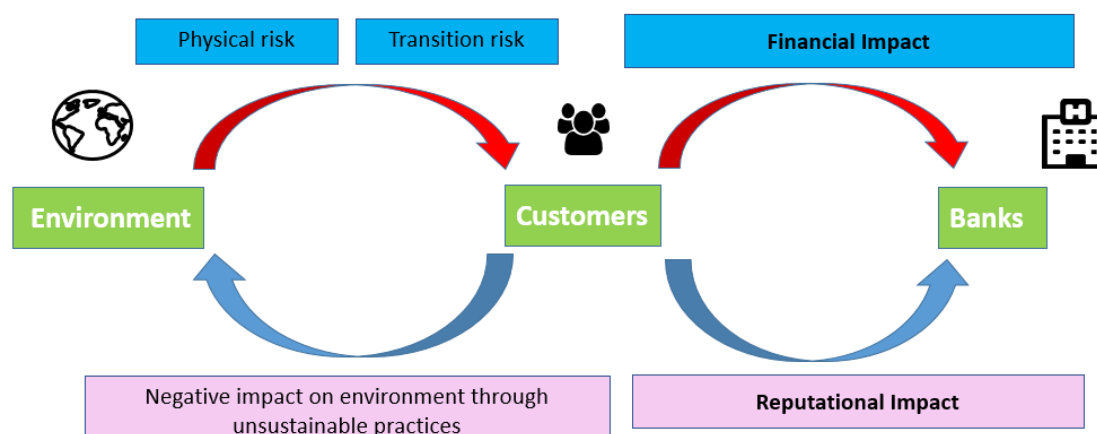
² For a locally-incorporated bank that is headquartered in Singapore, this refers to the group including the holding company in Singapore, as well as the bank's subsidiaries and branches in Singapore and overseas, where applicable. For a locally-incorporated subsidiary of a foreign bank, this refers to the subsidiary's operations in Singapore and its downstream subsidiaries and branches in Singapore and overseas, where applicable.

³ Based on the concept of natural capital, nature comprises of a stock of resources (e.g. water, forest and air), which provides ecosystem services (e.g. food, coastal protection and absorption of pollution) that underpin economic activities and human well-being. Drivers of environmental changes can adversely impact natural capital and disrupt the provision of ecosystem services, leading to reduced flow of benefits to the economy and people.

environmental challenges call for urgent collective actions to address environmental risk. Climate change stands at the forefront of these concerns, with the Intergovernmental Panel on Climate Change (“IPCC”) estimating that continued carbon emissions in line with historical rates would likely lead to global warming of 1.5 °C between 2030 and 2052⁴. There has also been a significant rate of decline in biodiversity worldwide, alongside a significant alteration of three-quarters of the land and more than 60% of the marine environment, which are caused by human actions⁵.

2.2 Environmental risk poses potential financial and reputational impact to banks (refer to diagram below for illustration). The financial impact on banks’ portfolios and activities can arise through physical and transition risk channels⁶. Physical risk arises from the impact of weather events and long-term or widespread environmental changes. Transition risk arises from the process of adjustment to an environmentally sustainable economy, including changes in public policies, disruptive technological developments, and shifts in consumer and investor preferences. The impact of environmental risk can vary by geography, line of business, sector, customer characteristic and other factors. As such, the extent to which environmental risk is relevant and material to a bank will vary depending on the bank’s business strategies and activities.

Potential financial and reputational impact of environmental risk on banks



2.3 Environmental risk can translate into financial risks to banks, including:

- a. Credit risk: Rising frequency and severity of extreme weather events can impair the value of assets held by banks’ customers, or impact supply chains affecting customers’ operations and profitability, and potentially, their viability. The

⁴ IPCC, *Global Warming of 1.5 degrees, Summary for Policymakers*, 2018.

⁵ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, *Global Assessment Report on Biodiversity and Ecosystem Services*, 2019.

⁶ These channels are more commonly associated with climate change given the current focus on transition to a low-carbon economy. Where applicable, banks should also consider physical and transition risk channels in relation to other aspects of environmental risk beyond climate change, as methodologies for managing and disclosing such risk continue to evolve.

transition to a low-carbon economy can also impact the profitability of customers in carbon-intensive businesses. In addition, punitive actions taken against customers that pollute the environment can result in a material financial impact on these customers (e.g. revocation of operational permits for customers involved in open burning practices). Water risk (e.g. water scarcity, pollution and droughts) may increase the operating cost of companies in water-intensive sectors. These factors can lead to increased credit risk for banks, as customers' abilities to repay their debt obligations are reduced, and collaterals held by banks are impaired.

- b. Market risk: Banks may be exposed to a decline in valuation and increased volatility in their investments (particularly in carbon-intensive sectors and companies that have contributed to significant environmental degradation) as a result of shifts in investor preferences.
- c. Liquidity risk: Natural disasters can cause widespread damage on physical property and incur significant costs (e.g. construction and repair), leading to a surge in funds withdrawal and demand for emergency loans, and exacerbating liquidity stresses in banks. Banks may also experience difficulties in liquidating assets impacted by weather events, or stranded in the transition towards an environmentally sustainable economy. Depositors and investors, who are increasingly environmentally-conscious, may also cut back on sources of funding for banks that finance activities with a negative impact on the environment.
- d. Operational risk: Severe extreme weather events can disrupt business continuity by negatively impacting the bank's infrastructure, systems, processes and staff. In addition, banks may face liability claims from parties who have suffered environmental-related losses and seek to recover those losses from banks they deem responsible.

2.4 Reputational risk can arise from banks financing customers that carry on business activities, which have a negative impact on the environment. Negative perception of such financing activities can adversely affect banks' abilities to maintain or establish business relationships.

2.5 It is crucial for banks to build resilience against the impact of environmental risk as part of their business and risk management strategies. Besides implementing robust environmental risk management policies and processes, banks can play a key role in the transition towards an environmentally sustainable economy by channelling capital through their green financing and investment activities. A gradual and smooth transition would alleviate physical and transition risks by reducing the probability of a "too little, too late" scenario, where physical costs of environmental changes may be exacerbated and policymakers would need to implement mitigation measures in a belated and disruptive manner. Engaging in green financing activities would also mitigate reputational risk for banks. The right-pricing of loans and investments to account for environmental risk will promote new opportunities for green financing. Banks can also contribute to global collective action by engaging with stakeholders such as customers, regulators, rating agencies, academia and civil

society, to promote mutual understanding on environmental issues across sectors and geographies.

3 GOVERNANCE AND STRATEGY

3.1 The Board of Directors (“Board”) and senior management play critical roles in incorporating environmental considerations into the bank’s risk appetite, strategies and business plans. These include identifying environmental risks and opportunities, and evaluating the actual and potential impact of these risks and opportunities on the bank’s strategies and plans. These should take into consideration the bank’s responses to the objectives set out under international agreements such as the Paris Agreement, as well as national policies. Board and senior management should consider both the short term (within the bank’s business planning horizon) and the longer term (given that the impact may arise beyond the maturity of current portfolios and run into decades) when assessing the impact of environmental risks and opportunities.

3.2 Board and senior management should maintain effective oversight of the bank’s environmental risk management and disclosure, including the policies and processes to assess, monitor and report such risk. Board and senior management should have an institution-wide view of the bank’s environmental risk exposures and oversee the integration of such risk into the bank’s enterprise risk management framework. Where environmental risk is deemed material to the bank, it should designate a senior management member or a committee to oversee environmental risk, to ensure that issues are reviewed at a sufficiently senior level.

3.3 The Board, or a committee delegated by it⁷, is responsible for:

- a. approving an environmental risk management framework and policies to assess and manage the bank’s environmental risk exposures on an ongoing basis;
- b. ensuring that environmental risk, where material, is addressed in the bank’s risk appetite framework, including the setting of qualitative and quantitative measures as appropriate. For example, the bank could establish a qualitative risk appetite statement that articulates its approach towards managing environmental risk, while quantitative risk appetite measures could include limits on aggregate exposures to sectors or customers with higher environmental risk;
- c. setting clear roles and responsibilities of Board and senior management, including personnel who are responsible for oversight of the bank’s environmental risk; and

⁷ For a bank incorporated in Singapore, the committee should be a Board-level committee. For a bank incorporated outside Singapore, the committee could be a Board-level committee, or a management committee or body responsible for the oversight of the institution in Singapore. Oversight of environmental risk management could be performed by a combination of local and global committees.

- d. ensuring that directors have adequate understanding of environmental risk and senior management is equipped with appropriate expertise for managing environmental risk.

3.4 Senior management is responsible for:

- a. ensuring the development and implementation of environmental risk management framework and policies, as well as tools and metrics to monitor exposures to environmental risk, including resilience of the bank's strategy to different environmental scenarios;
- b. reviewing regularly the effectiveness of the framework, policies, tools and metrics and making appropriate revisions, taking into account changes in the bank's risk profile and business strategies;
- c. establishing an internal escalation process for managing environmental risk (including material environmental risk exposures and exceptions to the environmental risk management framework or policies) and ensuring that appropriate and timely actions are taken to address the risk;
- d. updating the Board on material environmental risk issues in a timely manner; and
- e. allocating adequate resources with appropriate expertise, including through capacity building and training, to manage the bank's environmental risk.

4 RISK MANAGEMENT

Policies and Procedures

4.1 The bank should develop a risk management framework to manage environmental risk in a systematic and consistent manner⁸. Under this framework, the bank should put in place robust policies and processes, including:

- a. Clear articulation of the roles and responsibilities of business lines and functions in managing environmental risk;
- b. Identification and assessment of environmental risk on a customer and portfolio basis, including policies covering specific sectors with higher environmental risk;
- c. Implementation of effective risk management practices and internal controls to manage environmental risk; and

⁸ It is recognised that environmental risk management practices and methodologies are more established for climate risk at this stage. Banks may take a progressive approach towards environmental risk management, starting with more well-established areas, and then progressing to other environmental risk types as generally accepted methodologies and practices emerge.

- d. Effective monitoring of environmental risk and timely update to the bank's Board and senior management.

4.2 The bank should have in place a clear allocation of responsibilities for management of environmental risk in accordance with the three lines of defence model. Business line staff should assess environmental risk before accepting new businesses and in the ongoing management of business relationships, particularly for sectors with higher environmental risk. The risk management function should monitor the business line's implementation of the bank's environmental risk management policies, including challenging practices and decisions, where appropriate, while the compliance function should ensure adherence to applicable rules and regulations. The internal audit function should consider as part of its independent review, the robustness of the bank's risk management framework in managing environmental risk.

Risk Identification and Assessment

4.3 The bank should identify material environmental risk at both customer and portfolio levels (particularly for sectors with higher environmental risk), and assess the potential impact on the bank.

4.4 The bank should apply risk criteria to identify sectors with higher environmental risk. The risk criteria may include the level of greenhouse gas emissions, vulnerability to extreme weather events, and linkages to unsustainable energy practices, deforestation and pollution⁹. For sectors with higher environmental risk, the bank should develop sector-specific policies, which clearly articulate the bank's expectations towards an existing or prospective customer, and where possible, take into account internationally recognised sustainability standards and certification schemes¹⁰, as well as the customer's strategy to manage its environmental risk.

4.5 The bank should assess each customer's environmental risk as part of its assessment process for credit facilities or capital markets transactions (collectively referred to as "transactions"), particularly for sectors with higher environmental risk. The assessment should include, where relevant, the severity of the environmental risk, as well as capacity, commitment and track record of the customer in managing such risk. The assessment should also consider the ability and willingness of the customer to introduce risk mitigation measures. The bank may refer to external ratings on environmental performance, or develop its own risk assessment and rating methodology. The bank may also incorporate the customer's exposures to climate transition risk in its assessment. The scope and extent of this assessment may be calibrated based on factors including the sector, customer's operations, and nature and size of the transaction.

⁹ For reference, the Association of Banks in Singapore's Guidelines on Responsible Financing has set out a list of industries with elevated environmental, social and governance risks.

¹⁰ For example, the International Finance Corporation Performance Standards, Equator Principles and Roundtable on Sustainable Palm Oil.

4.6 Transactions with higher environmental risk should be subject to the bank's enhanced due diligence, which may include site visits to the customer and separate review by in-house or external personnel with environmental risk expertise. Where applicable, such transactions should be escalated to an internal committee or appointed individual for approval. All decisions are expected to be documented appropriately.

4.7 The bank should take a consistent approach to environmental risk and issues across different business lines (e.g. credit extension and underwriting services for capital markets transactions), where possible.

Risk Management and Monitoring

4.8 The bank should actively manage and monitor its environmental risk exposures at both customer and portfolio levels. At the customer level, the bank should monitor on an ongoing basis for any adverse environment-related activity, or potential non-compliance with the bank's policies.

4.9 Based on its risk assessment, the bank should engage each customer that poses higher environmental risk, and encourage the customer to improve its environmental risk profile and transition towards sustainable business practices over time, while maintaining the bank's risk management standards. In determining the extent of such engagement, the bank may consider the materiality of the environmental risk, the customer relationship and its willingness and ability to improve its environmental risk profile, and the availability of alternative options to effectively mitigate the bank's exposures to environmental risk. The bank may consider the use of financing conditions or covenants, to require a customer with higher environmental risk to take steps to manage its environmental risk within an acceptable timeframe. These conditions may include developing a sustainable transition strategy and adhering to applicable certification standards. The bank may also work with its customer to establish specific and meaningful environmental performance targets (e.g. carbon emission reduction and improvement in energy efficiency), and incentivise the attainment of these targets in a progressive manner (e.g. through a lower cost of borrowing for the customer). For a customer that does not manage its environmental risk adequately, the bank should consider a range of mitigating options such as reflecting the cost of the additional risk in the loan pricing, applying limits on the loan exposure, and re-assessing the customer relationship, including declining future transactions and exiting the relationship.

4.10 The bank should encourage customers to provide relevant corporate environment-related disclosures (to the extent appropriate and applicable), to foster greater awareness of environmental risk and engender responsible behavior. To inform its risk management, the bank should also consider using data from both publicly available and proprietary sources, and work with external experts to enhance the quality of data collected to better understand a customer's environmental risk profile.

4.11 At the portfolio level, the bank should develop quantitative and qualitative tools and metrics to monitor and assess its exposures to environmental risk, where material. For example, these metrics may be used to assess the bank's portfolio exposures to geographical

areas and sectors with higher environmental risk, measure the carbon intensity of customers in high-risk sectors, or consider the impact of environmental risk on its collateral valuations. The bank may also evaluate the alignment of its lending portfolio with international climate targets and benchmarks, such as the Paris Agreement. Beyond climate change, customer and portfolio metrics may be used to evaluate the dependencies of key customer segments on ecosystem services and natural capital. This may include assessing the impact of water stresses on corporates' financial performance, or considering the impact of biodiversity loss on crop production and profitability of relevant industries such as the food production and processing industries¹¹. In determining the environmental risk metrics, the bank should consider the materiality of the environmental risk factors, and risks of greater materiality and severity should be prioritised and monitored more closely. Where the potential impact of environmental risk is assessed to be material, the bank should take appropriate mitigating measures. For example, the bank could develop plans to manage significant concentration in its portfolio to geographies and sectors with higher environmental risk.

4.12 The bank should provide all relevant information on its material environmental risk exposures to its Board and senior management to monitor progress against the bank's risk appetite and business strategies, and to support decision making on environmental risk management. In addition, exceptions noted during the monitoring process should be addressed promptly and surfaced to senior management, or the Board, where warranted.

Scenario Analysis and Stress Testing

4.13 The bank should develop capabilities in scenario analysis and stress testing to assess the impact of material environmental risk on its risk profile and business strategies, and explore its resilience to financial losses under a range of outcomes. The bank should identify and simulate scenarios, which are plausible and relevant to the bank, while factoring in the interlinkages between environmental risk and other risks¹². For stress testing purposes, the bank should incorporate these risks both qualitatively and quantitatively into the scenarios¹³ and project its financial conditions under a base scenario and stress scenarios.

4.14 The bank should include, where relevant, short-term and long-term environmental scenarios (using conservative and regularly reviewed assumptions) into its scenario analysis and stress testing for strategic planning and risk management purposes. The analysis may incorporate an assessment of physical and transition risks across a range of climate-related

¹¹ Network for Greening the Financial System, *Overview of Environmental Risk Analysis by Financial Institutions*, 2020, and De Nederlandsche Bank, *Indebted to nature: Exploring biodiversity risks for the Dutch financial sector*, 2020.

¹² Banks should keep abreast of good practices in this evolving area, e.g. the Task Force on Climate-related Financial Disclosures' *Technical Supplement: The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities*, 2017, and NGFS' *Climate Scenarios for Central Banks and Supervisors*, 2020. Banks may also consider referring to scenarios aligned with scientific climate change pathways, including from the IPCC or International Energy Agency.

¹³ In particular, quantitative parameters that correspond to specific stress testing scenarios may be informed by modelling work. Examples of such modelling include the use of statistical models to determine the frequency of flooding events, or the use of modified economic models to estimate economic or financial impact.

scenarios, including increases in global temperature and whether the transition to a low-carbon economy occurs in an orderly or disorderly fashion. For example, on physical risk, the bank may estimate how changes in climate and extreme events can affect the productivity of assets within customers' portfolios, and impact their revenue and probability of default. On transition risk, the bank may analyse the impact of varying carbon taxes on customers' cash flows and creditworthiness. The more severe scenarios could include the implementation of aggressive climate change mitigation policies globally, for example, a sharp rise in carbon taxes, or much stricter environmental regulations. These scenarios should also incorporate forward-looking information, as analysis that relies solely on historical data might systemically underestimate potential risks, in view of the uncertainties and long-term horizon associated with changes in the environment¹⁴.

4.15 The bank should use the results of its scenario analysis and stress testing when reviewing its environmental risk management policies and practices. The bank should also maintain proper documentation of the key features of the scenario analysis and stress testing, including the choice of scenarios, reasonableness of assumptions, assessment of results, considerations on the need to take actions, and actions taken to address the risk.

Capacity Building

4.16 The bank should equip its staff, including through capacity building and training, with adequate expertise to assess, manage and monitor environmental risk in a rigorous, timely and efficient manner. The bank should regularly review such capacity building programmes to incorporate emerging issues relating to environmental risk management.

5 DISCLOSURE

5.1 The bank should, at least on an annual basis, disclose its approach to managing environmental risk in a manner that is clear and meaningful to its stakeholders. The bank is encouraged to disclose the potential impact of material environmental risk on the bank¹⁵, including quantitative metrics such as exposures to sectors with higher environmental risk. The bank's disclosure may be consolidated at the group¹⁶ or head office level.

5.2 The bank's disclosure should be in accordance with well-regarded international reporting frameworks¹⁷, such as recommendations by the Financial Stability Board's Task Force on Climate-related Financial Disclosures ("TCFD"). The TCFD recommendations provide a useful framework for the disclosure of climate-related risks as follows¹⁸:

¹⁴ Central Banks and Supervisors Network for Greening the Financial System, *Technical Supplement: Macroeconomic and financial stability: Implications of climate change*, 2019.

¹⁵ The bank should make the disclosure in a sustainability report, annual report and/or on its official website.

¹⁶ Group refers to the ultimate holding company, its subsidiaries and any other company or entity treated as part of the ultimate holding company's group of companies according to the Accounting Standards.

¹⁷ For example, standards and frameworks set by the CDP, Climate Disclosure Standards Board, Global Reporting Initiative, International Integrated Reporting Council, and Sustainability Accounting Standards Board.

¹⁸ TCFD, *Recommendations of the Task Force on Climate-related Financial Disclosures*, 2017.

- a. Governance, including the Board's oversight and management's role in assessing and managing climate-related risks and opportunities;
- b. Strategy, in relation to the actual and potential impact of climate-related risks and opportunities on the bank's businesses, strategy and financial planning, where such information is material;
- c. Risk management, with regard to how the bank identifies, assesses and manages climate-related risks; and
- d. Metrics and targets, to assess and manage relevant climate-related risks and opportunities where such information is material¹⁹.

5.3 The bank should review its disclosure regularly to improve its comprehensiveness, clarity and relevance, taking into account generally accepted measurement practices and methodologies.

¹⁹ For example, TCFD recommends the disclosure of Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas emissions, and the related risks. Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.