



BANK OF MAURITIUS

**Guideline on Climate-related and
Environmental Financial Risk Management**

April 2022

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INTRODUCTION

Background

The Bank of Mauritius (Bank) recognises that climate-related and environmental events create financial risks which may pose a risk to financial stability.

The Bank is, in this Guideline, setting out its expectations of a prudent approach to climate-related and environmental financial risks with a view to enhancing the resilience of the banking sector against these risks.

The Guideline is intended to assist financial institutions in embedding sound governance and risk management frameworks for climate-related and environmental financial risks within their existing risk management frameworks. This will enable them to better understand, identify, assess, monitor and mitigate these risks. Financial institutions will be also in a better position to identify the risks and opportunities arising from the transition to a low-carbon and more circular economy and consider them in their strategy, engagement with their counterparts and other decision-making processes. The Guideline further outlines the broad principles which financial institutions may use to develop their climate-related and environmental financial disclosures.

The Bank has taken into consideration the recommendations of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) in its Guide for Supervisors, “Integrating climate-related and environmental risks into prudential supervision”, issued in May 2020, as well as other related guidance issued by the NGFS, the Financial Stability Board, the Basel Committee on Banking Supervision and other regulators.

Authority

This Guideline is issued under the authority of section 50 of the Bank of Mauritius Act 2004 and section 100 of the Banking Act 2004.

Scope of application

This Guideline applies to all banks and non-bank deposit taking institutions licensed by the Bank of Mauritius, herein collectively referred to as financial institutions.

Proportionality

Financial institutions are expected to develop and implement internal frameworks for the identification, assessment, management and disclosure of climate-related and environmental financial risks commensurate with the nature, scale and complexity of their activities and risk exposures.

Transitional Arrangements

In view of the practical challenges that financial institutions are likely to face in addressing climate-related and environmental financial risks, a transitional period up to 31 December 2023 from the effective date of this guideline is provided for development and implementation of relevant frameworks. Financial institutions shall submit their internal roadmaps within six

months from the effective date of this Guideline and progress reports on a half-yearly basis.

Effective date

This Guideline shall come into effect on 01 April 2022.

Section I: Definition of Climate-related and Environmental Financial risks

1. Climate-related financial risks refer to financial risks posed by the exposure of financial institutions to physical or transition risks caused by or related to climate change. This may include damage caused by extreme weather events or a decline in asset value in carbon-intensive sectors.
2. Environmental financial risks refer to financial risks posed by the exposure of financial institutions to activities that may potentially cause or be affected by environmental degradation (such as air pollution, water pollution and scarcity of fresh water, land contamination and desertification, biodiversity loss, and deforestation) and the loss of ecosystem services.
3. Climate-related and environmental financial risks can arise through physical risk and transition risk channels.
4. Physical risks refer to the potential economic costs and financial losses resulting from the increasing severity and frequency of either:
 - a. extreme climate change-related weather events such as heatwaves, landslides, floods, wildfires and storms (i.e. acute climate-related physical risks); or
 - b. longer-term gradual shifts of the climate such as changes in precipitation, extreme weather variability, ocean acidification, and rising sea levels and average temperatures (i.e. chronic climate-related physical risks); or from
 - c. environmental degradation (such as air, water and land pollution, water stress, biodiversity loss, degradation of soil quality, deforestation and desertification).
5. Transition risks refer to financial risks which can result from the process of adjustment towards a lower-carbon and more circular economy, prompted, for example, by changes in climate and environmental policy, technology or market sentiment and preferences.
6. Climate-related and environmental financial risks are drivers of other prudential risks. Below are examples of how they can drive other prudential risks:
 - a. Credit risk increases if climate-related and environmental financial risk drivers reduce borrowers' ability to repay and service debt (income effect) or ability of financial institutions to fully recover the value of a loan in the event of default (wealth effect). The probability of default of borrowers or loss given default to lenders may thus be negatively affected.
 - b. Market risk may increase due to reduction in financial asset values, including the potential to trigger large, sudden and negative price adjustments where climate-related and environmental financial risks are not yet incorporated into prices.

Climate-related and environmental financial risks could also lead to a breakdown in correlations between assets or a change in market liquidity for particular assets, undermining risk management assumptions.

- c. Operational risk may be driven by potential reputational damage resulting from changing market or consumer sentiment, interruption of business continuity or increasing legal and regulatory compliance risk associated with climate-sensitive investments and businesses.
 - d. Liquidity risk may be impacted on the assets side and on the funding side. Liquidity risk may increase as access of financial institutions to stable sources of funding could be reduced as market conditions change. Climate risk drivers may cause counterparties of financial institutions to draw down deposits and credit lines.
7. Annex 1 provides examples of climate-related and environmental financial risk drivers and how they translate into other prudential risks.

Section II: Business Models and Strategy

8. Financial institutions shall:
- i. understand the potential impact of material climate-related and environmental financial risks on their business environment as well as the opportunities that may arise and consider them in their internal operations, strategies, business model, risk appetites and other decision-making processes;
 - ii. consider the Nationally Determined Contributions (NDCs) of Mauritius¹ in their business models, strategies and risk appetites, as relevant; and
 - iii. implement risk mitigation plans for managing the impact of climate-related and environmental financial risks on their internal operations and business models.

Section III: Governance

Role of the board of directors

9. The board of directors shall:
- i. ensure an appropriate collective understanding of and relevant expertise on climate-related and environmental financial risks at both board level and senior management level;

¹ NDCs are government obligations under the Paris Agreement in which countries set targets for mitigating the greenhouse gas emissions that cause climate change and for adapting to climate impacts. More information on NDCs, including the NDCs of Mauritius, can be accessed at <https://www.un.org/en/climatechange/all-about-ndcs>.

- ii. approve and periodically review the strategy and risk management framework for climate-related and environmental financial risks and opportunities;
- iii. clearly set the roles and responsibilities of senior management, internal organisational structures as well as board sub-committees, as applicable, for the management of climate-related and environmental financial risks;
- iv. ensure adequate and timely reporting to the board and board sub-committee on climate-related and environmental financial risks and opportunities; and
- v. require relevant capacity development and training programmes on climate-related and environmental financial risks.

Role of senior management

10. Senior management shall:

- i. develop and implement the climate-related and environmental financial risk management framework and policies;
- ii. regularly review the effectiveness of the framework, policies, tools and controls;
- iii. provide periodic reports, at least on a half-yearly basis, to the board on climate-related and environmental financial risks issues and opportunities as well as on the effectiveness and adequacy of the framework;
- iv. require that the internal structures responsible for managing climate-related and environmental financial risks are clearly defined and have adequate resources, skills and expertise;
- v. ensure adequacy and appropriateness of the training and capacity development plans. In particular, frontline staff shall have sufficient awareness and understanding to identify potential climate-related and environmental financial risks; and
- vi. ensure that material climate-related and environmental financial risk issues are addressed in a timely manner.

Section IV: Internal Control Framework and Risk Management

Policies and Procedures

11. Financial institutions shall incorporate the management of material climate-related and environmental financial risks within their risk management policies and procedures for relevant prudential risks.

Risk Management Framework

12. Financial institutions shall have an adequate and appropriate risk management framework, across the three lines of defence, to ensure sound, comprehensive and effective identification, measurement, monitoring, mitigation and management of material climate-related financial risks.
13. Financial institutions shall clearly define and communicate the roles and responsibilities of business lines and three lines of defence in relation to climate-related and environmental financial risks.
 - i. In the first line of defence, frontline staff shall undertake climate-related and environmental financial risk assessments for instance during client onboarding, credit application and credit review process.
 - ii. In the second line of defence, the risk function shall conduct independent climate-related and environmental financial risk assessment and monitoring. The compliance function shall ensure adherence to applicable rules and regulations.
 - iii. In the third line of defence, internal audit shall perform regular reviews of the adequacy, appropriateness and effectiveness of the risk management and internal control framework for climate-related and environmental financial risks.

Risk Identification

14. Financial institutions shall have a framework for identifying climate-related and environmental financial risks which shall as a minimum:
 - i. comprise a process for the identification of climate-related and environmental risks, deemed as material, at the level of counterparty, business lines, sectors and geographical locations as appropriate;
 - ii. include clear board-approved criteria and thresholds for determining materiality of climate-related and environmental financial risks taking into consideration that their risk management framework shall enable them to recognise all such material risks on an enterprise-wide basis;
 - iii. consider the potential impact of such material risks in the short-, medium-, and long-term;
 - iv. incorporate result of stress testing and scenario analysis;
 - v. consider the impact of material climate-related and environmental financial risks in their internal capital and liquidity adequacy assessment processes; and

- vi. ensure that material climate-related and environmental financial risks are duly assessed at loan origination stage and at subsequent reviews. The assessment shall include the ability and willingness of the borrowers to manage and reduce the risks and the potential impact on the probability of defaults and the value of the collaterals.

Risk Measurement and Monitoring

15. Financial institutions shall have a framework for measuring and monitoring material climate-related and environmental financial risks which shall as a minimum:
- i. include the development of relevant risk indicators to categorise counterparties, sectors and geographical locations based on the extent of climate-related and environmental financial risks;
 - ii. comprise an adequate risk monitoring process which includes usage of qualitative and quantitative analytic tools and metrics to monitor relevant risk indicators and climate-related and environmental financial risk exposures against the overall strategy and risk appetite for climate-related and environmental financial risks and to support decision making;
 - iii. ensure that the risk appetite framework incorporates relevant risk exposure limits and thresholds for the risks; and
 - iv. encompass measures to encourage counterparties to provide relevant disclosures on climate-related and environmental financial risks.

Risk Mitigation and Management

16. Financial institutions shall have a framework for mitigating material climate-related and environmental financial risks which shall as a minimum:
- i. require appropriate risk mitigation plan where the risks are assessed as being material; and
 - ii. include regular engagement with counterparties representing material risk to understand and monitor their risk mitigating plans.
17. Financial institutions shall understand the impact of climate-related and environmental financial risk drivers on their prudential risk profiles and ensure that risk management systems and processes for prudential risks consider material climate-related and environmental financial risks. Financial institutions shall, as a minimum, consider the following risk management approaches for prudential risks.

i. Credit Risk

- a. Financial institutions shall incorporate consideration of material climate-related and environmental financial risks into the entire credit life cycle, including client due diligence as part of the onboarding process and ongoing monitoring of clients' risk profiles.
- b. Financial institutions shall identify, measure, evaluate, monitor, report and manage the concentrations within risk types associated with climate-related and environmental financial risks such as exposure to geographies and sectors with higher climate-related and environmental financial risk.

ii. Liquidity Risk

- a. Financial institutions shall assess the impacts of climate-related and environmental financial risks on net cash outflows (e.g. increased drawdowns of credit lines, accelerated deposit withdrawals) or the value of assets comprising their liquidity buffers.

iii. Market Risk

- a. Financial institutions shall understand how climate-related and environmental financial risk drivers could impact the value of financial instruments in their portfolios, evaluate the potential risk of losses from increased volatility of their portfolio, and establish effective processes to control or mitigate the associated impact.

iv. Operational Risk

- a. Financial institutions shall determine the potential impacts of physical risk drivers on their business continuity and consider same when developing business continuity plans.

Risk Reporting

18. Financial institutions shall have a framework for reporting climate-related and environmental financial risks which shall, as a minimum, include timely provision of relevant information to their board of directors and senior management, on at least a half-yearly basis, on material risks as well as on opportunities.

Section V: Scenario Analysis and Stress Testing

19. Financial institutions shall use scenario analysis and stress testing as a key tool to substantiate the risk identification process and understand the financial risks to their business model from climate change and environmental degradation.

20. Financial institutions shall regularly use scenario analysis and stress testing to determine the size and potential impact of climate-related and environmental financial risks and to assess the resilience and vulnerabilities of their business model to such events.
21. Financial institutions shall as a minimum:
- i. consider a range of outcomes relating to different transition pathways and different channels including through physical and transition risks;
 - ii. cover short-, medium- and long-term time horizons related to climate change and environmental degradation;
 - iii. consider forward-looking information, in addition to historic data; and
 - iv. assess the impact of scenarios on their revenues, assets, significant counterparties, liquidity and capital positions.
22. Financial institutions may consider the work of international bodies on the matter such as the scenarios envisaged by the NGFS for climate change. Annex 2 provides a brief overview of the scenarios considered by the NGFS in its latest publication on the matter.

Section VI: Disclosure

23. Financial institutions shall disclose, at least on an annual basis, in their annual reports, information on climate-related and environmental financial risks they are exposed to, the potential impact of material risks and their approach to manage these risks. The disclosure requirement will be effective as from financial year ending 31 December 2023.
24. Financial institutions may consider the guidance provided in wider initiatives on financial disclosure of climate-related and environmental financial risks such as guidance provided by the Financial Stability Board's Task Force on Climate-related Financial Disclosures.
25. Financial institutions shall regularly review and reinforce their disclosures, with a view to make them as insightful as possible. The disclosures shall take into consideration the evolving needs of stakeholders regarding information on climate-related and environmental financial risks and reflect the financial institutions' evolving understanding of these risks.

Governance

26. Financial institutions shall disclose their governance process regarding climate-related and environmental financial risks. This shall include the roles and responsibilities of the board and senior management.

Strategy

27. Financial institutions shall disclose:

- i. their strategy for climate-related and environmental financial risks; and
- ii. the climate-related and environmental financial risks and opportunities which have been identified over the short-, medium-, and long-term and the impact thereof on their strategy and financial planning.

Risk Management

28. Financial institutions shall disclose:

- i. the processes for identifying, assessing and managing climate-related risks and environmental financial risks;
- ii. the elements which were considered in their assessment of the materiality of climate-related and environmental financial risks; and
- iii. how climate-related and environmental financial risks are integrated in their overall risk management framework.

Metrics and Targets

29. Financial institutions shall disclose:

- i. the key performance indicators and key risk indicators they have used, with regard to climate-related and environmental financial risks, for the purposes of their strategy-setting and risk management;
- ii. the current performance of their key performance indicators and key risk indicators against their internal targets and against relevant climate and environment goals; and
- iii. the reference methodologies, definitions and criteria associated with the metrics and targets included in their disclosure.

Section VII: Reporting Requirements

30. Financial institutions shall submit to the Bank:

- i. their roadmap for the development of their internal framework for climate-related and environmental financial risks by 30 September 2022;
- ii. progress reports on the roadmap on a half-yearly basis with the first report due by 31 March 2023; and

iii. the set of draft disclosures as per the following schedule.

Financial Year Ending	Draft Disclosure Submission
31 December 2022	31 March 2023
31 March 2023	30 June 2023
30 June 2023	30 September 2023
30 September 2023	31 December 2023

Bank of Mauritius
01 April 2022

Annex 1: Examples of climate-related and environmental financial risk drivers as drivers of other prudential risks

Risks	Physical		Transition	
	Climate-related	Environmental	Climate-related	Environmental
	<p>Examples of acute drivers:</p> <ul style="list-style-type: none"> • Droughts • Floods • Storms • Heatwaves • Landslides • Wildfires <p>Examples of chronic shift in patterns:</p> <ul style="list-style-type: none"> • Extreme weather variability • Ocean acidification • Increasing temperature • Sea-level rises • Shift in rainfall patterns 	<p>Examples:</p> <ul style="list-style-type: none"> • Air pollution • Water pollution • Water stress • Land contamination • Degradation of soil quality • Desertification • Deforestation • Biodiversity loss • Resource scarcity • 	<p>Examples:</p> <ul style="list-style-type: none"> • Policy, legislation and regulation changes: <ul style="list-style-type: none"> ○ Carbon pricing ○ Other green energy transition measures • Technological changes with shift to greener alternatives • Shifting market or customer sentiment with preferences for greener alternatives 	<p>Examples:</p> <ul style="list-style-type: none"> • Policy, legislation and regulation changes: <ul style="list-style-type: none"> ○ Pollution control ○ Pesticide control ○ Environmental conservation measures • Technological changes with shift to greener alternatives • Shifting market or customer sentiment with preferences for greener alternatives
Credit	<p>The ability to repay or exposure at risk may be impacted, for example:</p> <ul style="list-style-type: none"> • through a reduction in income following a climate event; • lower collateral valuations in real estate portfolios as a result of increased flood risk/ damaged properties/ lower yields in food crops. 		<p>Transition measures may trigger substantial adaptation costs and lower profitability, which may lead to an impact on the ability to repay as well as lower collateral values.</p>	

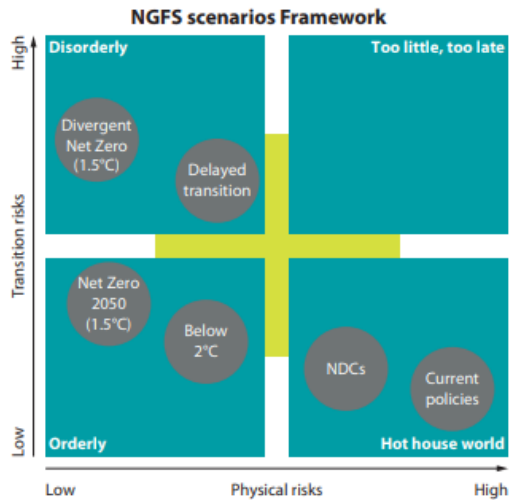
Market	Physical risk drivers may lead to a change in market sentiment and be the cause for sudden repricing or changes in volatility.	Transition risk drivers may affect highly polluting with high carbon emissions leading to a repricing of securities and derivatives related to such industries.
Operational	Extreme weather events may cause damage to the properties of financial institutions, such as branches and data centres, leading to disruption in their operations.	Shifting market sentiment regarding climate issues may lead to reputation and liability risks for financial institutions as a result of their financing of environmentally controversial activities.
Other risks: Liquidity and Business model	Physical risk drivers may affect counterparties and have them withdraw their funds to repair damages caused by such events.	Transition risk drivers may affect the viability of some business lines and lead to strategic risk for specific business models. The liquidity of financial institutions may be affected by abrupt repricing of securities due to transition risk drivers.

Annex 2: Scenarios envisaged by NGFS

In its publication, ‘NGFS Climate Scenarios for central banks and supervisors’ of June 2021, the NGFS considered six scenarios covering the three dimensions of orderly scenario, disorderly scenario and ‘Hot house world’ scenario. The scenarios were chosen to show a range of risk outcomes and cover the following assumptions.

Dimension	Scenario
<p>Orderly</p> <p>Orderly scenarios assume climate policies are introduced early and become gradually more stringent. Both physical and transition risks are relatively subdued.</p>	<p>Net Zero 2050 - Net Zero 2050 limits global warming to 1.5°C through stringent climate policies and innovation, reaching global net zero CO2 emissions around 2050. Some jurisdictions such as the US, EU and Japan reach net zero for all GHGs.</p>
	<p>Below 2°C - Below 2°C gradually increases the stringency of climate policies, giving a 67% chance of limiting global warming to below 2°C.</p>
<p>Disorderly</p> <p>Disorderly scenarios explore higher transition risk due to policies being delayed or divergent across countries and sectors. For example, carbon prices would have to increase abruptly after a period of delay.</p>	<p>Divergent Net Zero - Divergent Net Zero reaches net zero around 2050 but with higher costs due to divergent policies introduced across sectors leading to a quicker phase out of oil use.</p>
	<p>Delayed transition - Delayed transition assumes annual emissions do not decrease until 2030. Strong policies are needed to limit warming to below 2°C. CO2 removal is limited.</p>
<p>Hot house world</p> <p>Hot house world scenarios assume that some climate policies are implemented in some jurisdictions, but globally efforts are insufficient to halt significant global warming. The scenarios result in severe physical risk including irreversible impacts like sea-level rise.</p>	<p>Nationally Determined Contributions (NDCs) - NDCs includes all pledged policies even if not yet implemented.</p>
	<p>Current Policies - Current Policies assumes that only currently implemented policies are preserved, leading to high physical risks.</p>

The overall physical and transition risk involved with each scenario, as extracted from the publication by NGFS, are as highlighted below:



Category	Scenario	Physical risk		Transition risk		
		Policy ambition	Policy reaction	Technology change	Carbon dioxide removal	Regional policy variation ⁺
Orderly	Net Zero 2050	1.5°C	Immediate and smooth	Fast change	Medium use	Medium variation
	Below 2°C	1.7°C	Immediate and smooth	Moderate change	Medium use	Low variation
Disorderly	Divergent Net Zero	1.5°C	Immediate but divergent	Fast change	Low use	Medium variation
	Delayed transition	1.8°C	Delayed	Slow/Fast change	Low use	High variation
Hot House World	Nationally Determined Contributions (NDCs)	~2.5°C	NDCs	Slow change	Low use	Low variation
	Current Policies	3°C+	None – current policies	Slow change	Low use	Low variation

Colour coding indicates whether the characteristic makes the scenario more or less severe from a macro-financial risk perspective[^]

- Lower risk
- Moderate risk
- Higher risk