

SFD Circular No: 01

Date: 06 November 2025
২১ কার্তিক ১৪৩২

Managing Director/Chief Executive Officer

All Scheduled Banks and Finance Companies operating in Bangladesh

Dear Sir,

Guideline on Climate Risk Management for Banks and Finance Companies.

1. Bangladesh is recognized as one of the most climate-vulnerable countries in the world. Consequently, its financial sector is highly exposed to both the direct and indirect impacts of climate change. Climate change poses both physical risks (e.g., floods, cyclones, heatwaves) and transition risks (e.g., policy reforms, technological changes, carbon pricing), which can impair asset quality, reduce collateral values, and increase credit, market, liquidity, and operational risks. While these challenges are crucial, climate change also presents substantial financing opportunities by strategically channelling investments toward climate mitigation and adaptation initiatives reducing both physical and transition risks.
2. Recognizing the significance of these challenges and their potential impact on the financial sector, Bangladesh Bank is hereby issuing the Guideline on Climate Risk Management for Banks and Finance Companies to ensure the systematic identification, assessment, management, and disclosure of climate-related risks and opportunities.
3. Bangladesh Bank has issued the Guideline on Sustainability and Climate-related Financial Disclosure for Banks and Finance Companies in alignment with the ISSB Standards to strengthen the quality, consistency, and comparability of climate-related reporting. Guideline on Climate Risk Management is expected to serve as a catalyst in facilitating the smooth and effective implementation of climate-related financial disclosures across banks and finance companies. This guideline incorporates international standards and best practices to ensure the effective implementation of climate-related financial disclosures.
4. Appendices to this circular shall be deemed to be an integral part of the circular. Reporting as per the attached template should be submitted to Sustainable Finance Department on semi-annual basis by the last working day of the following month.
5. This Guideline is being issued in exercise of its power conferred on it under Section 45 of the Bank Companies Act, 1991 (amended up to 2023) and Section 41(2) of the Finance Company Act, 2023.
6. This circular will come into force with immediate effect.

Attachment: As stated.

Yours Faithfully,



(Chowdhury Liakat Ali)
Director (SFD)
Phone: 9530320

**GUIDELINE ON
CLIMATE RISK MANAGEMENT
FOR BANKS AND FINANCE COMPANIES**



**Bangladesh Bank
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November 2025

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Preamble

Bangladesh is highly vulnerable to climate-related risks such as cyclones, flooding, droughts, heat stress, etc., leading to financial losses of approximately \$3 billion annually according to the World Bank. These risks, exacerbated by climate change threaten economic stability by impacting climate-sensitive sectors. The country faces additional risks from the global transition to a low-carbon economy. Despite these challenges, Bangladesh has shown proactive leadership in disaster risk management through strategic initiatives such as the Bangladesh Delta Plan 2100 and the National Adaptation Plan (NAP), aimed at enhancing resilience across key sectors.

Bangladesh Bank recognizes climate change as a critical threat to financial stability and has introduced a series of policies and guidelines since 2011 to integrate climate risk into banking operations. While climate change present significant challenges, they also create substantial financing opportunities for banks and finance companies with the right strategies. Key sectors such as energy, agriculture, RMG etc. will require substantial investment, with banks and finance companies playing a crucial role in increasing private sector participation. Investments in mitigation and adaptation will reduce both physical and transition risks for businesses, creating a climate resilient economy. To guide this transition, Bangladesh Bank has issued Guideline on Sustainability and Climate-related Financial Disclosure in 2023 instructing banks and finance companies to disclose the sustainability and climate-related financial risks and opportunities in their annual report aligning with international best practice (IFRS S1 and S2). Guideline on Climate Risk Management will guide banks and finance companies to identify, assess, manage, monitor and report climate risk.

Acknowledgement

The Guideline on Climate Risk Management for Banks and Finance Companies has come into light with prudent reviews and guidance of Honorable Governor, Deputy Governor and Executive Director in charge of Sustainable Finance Department of Bangladesh Bank.

Bangladesh Bank acknowledges the valuable contribution of the International Finance Corporation (IFC) in the development of the Climate Risk Management Guideline for Banks and Finance Companies. IFC's technical assistance and global expertise, along with feedback from relevant departments of Bangladesh Bank and the financial industry, have been instrumental in shaping this framework to align with international best practices. This collaboration has significantly supported Bangladesh Bank's efforts to enhance climate risk management capacity across the financial system and to foster a climate resilient and low carbon economy.

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List of Abbreviations

Bangladesh Meteorological Department	BMD
Basel Committee on Banking Supervision	BCBS
Carbon Border Adjustment Mechanism	CBAM
Corporate Social Responsibility	CSR
Credit Risk Management	CRM
Development Finance Institution	DFI
Early Warning Indicator	EWI
Environmental & Social Risk Management	ESRM
Environmental & Social	E&S
Environmental & Social Due Diligence	ESDD
Foreign Exchange	FX
Glasgow Financial Alliance for Net Zero	GFANZ
Green Climate Fund	GCF
Greenhouse Gas	GHG
Gross Domestic Product	GDP
Internal Capital Adequacy Assessment Process	ICAAP
Internal Liquidity Adequacy Assessment Process	ILAAP
Internal Ratings-Based	IRB
International Energy Agency	IEA
International Financial Reporting Standards	IFRS
Intergovernmental Panel on Climate Change	IPCC
International Sustainability Standards Board	ISSB
Key Performance Indicator	KPI
Key Risk Indicator	KRI
National Adaptation Plan	NAP
Nationally Determined Contribution	NDC
Net Present Value	NPV
Network for Greening the Financial System	NGFS
Non-Performing Loan	NPL
Paris Agreement Capital Transition Assessment	PACTA
Partnership for Carbon Accounting Financials	PCAF
Probability of Default	PD
Ready-Made Garments	RMG
Representative Concentration Pathways	RCP
Science Based Targets initiative	SBTi
Shared Socio-Economic Pathway	SSP
Taskforce on Climate-related Financial Disclosures	TCFD
Transition Pathway Initiative	TPI
Transition Plan Taskforce	TPT

1. Introduction

Following the adoption of the Paris Agreement on climate change and the UN 2030 Agenda for Sustainable Development in 2015, governments are making strides to transition to low-carbon and more circular economies on a global scale. In this evolving landscape, the financial sector plays a critical role in mobilizing the capital needed for the global shift toward sustainability. Consequently, Banks and Finance Companies need clear and comprehensive responses to the risks posed by climate change. These risks include physical risks, which cause direct damage to people, particularly vulnerable communities, including women, physical assets and economies, and transition risk, which causes direct and indirect impacts through the transition to a lower-carbon economy.

Bangladesh is severely affected by the physical impacts of climate change. The World Bank estimates an average annual loss due to climate hazards equal to \$3 billion, although individual events can result in larger losses. For instance, cyclones, a significant source of disasters in Bangladesh due to the combination of the coastal region and low-lying topography, cause average annual losses of approximately \$1 billion, while up to \$3.8 billion and \$3 billion of losses were attributed to the cyclones in 2007 and 1991 respectively.¹ Flooding is a material risk to Bangladesh due to its complex network of around 700 rivers, with nearly 80% of the country's surface area categorized as floodplain formed by the Ganges, Brahmaputra and Meghna rivers. Coastal flooding is another problem, with two-thirds of Bangladesh less than 5 meters above sea-level.² Bangladesh experiences droughts on average every 2.5 years³, and occurrences of heat stress are particularly high due to the combination of high humidity levels and increasing temperatures.⁴ Rising temperatures, sea level rises, and changes in rainfall patterns are all projected to contribute to an increase in flooding, cyclones, heat stress, and drought. This escalation will result in further damages, including disruptions to livelihoods, agricultural productivity, and local economies.⁵

Overall, vulnerability to physical climate change impacts is pronounced in Bangladesh due to high population density, ongoing adaptation needs, low resilience to economic shocks, and exposure to climate sensitive sectors. Agriculture is likely to see reduced crop yields as a result of climate change, and is responsible for around 11.38% of GDP (as of FY 2022-23)

¹ World Bank Climate Risk Country Profile: Bangladesh

https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15502-WB_Bangladesh%20Country%20Profile-WEB.pdf

² Grantham Research Institute on Climate Change and the Environment, 'Tackling flooding in Bangladesh in a changing climate'. <https://www.lse.ac.uk/granthaminstitute/publication/tackling-flooding-in-bangladesh-in-a-changing-climate/>; Dagastir, 'Modeling recent climate change induced extreme events in Bangladesh: A review'. <https://www.sciencedirect.com/science/article/pii/S2212094714000826>

³ Sarkar et al, 'Delineating the drought vulnerability zones in Bangladesh'. <https://www.nature.com/articles/s41598-024-75690-w>

⁴ Kamal et al, 'Changes in wet bulb globe temperature and risk to heat-related hazards in Bangladesh'.

<https://www.nature.com/articles/s41598-024-61138-8>; Govt. of the People's Republic of Bangladesh, 'National Guideline on Heat-Related Illness'.

https://dghs.portal.gov.bd/sites/default/files/files/dghs.portal.gov.bd/notices/23e5ad95_395e_4e75_8602_23d266ffd6ca/2024-07-09-04-39-d4da562016555d65823ffb4c2a52a9ef.pdf

⁵ IPCC, "Climate Change 2022: Impacts, Adaptation and Vulnerability".

https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.pdf

and 45.4% of employment (as of 2022).⁶ The Ready-Made Garments (RMG) sector is another significant contributor to the Bangladeshi economy, for which one recent study⁷ estimated that Bangladesh could lose \$27 billion in annual apparel exports by 2030 due to extreme heat and flooding impacts. Industry including mining, quarrying, construction, and manufacturing, making up 21% of employment, is also sensitive to hazards such as heat stress due to the impact of extreme heat on productivity and worker safety. Further financial impacts are likely to be felt through the direct impact on human health and mortality, as well as destruction of infrastructure assets.

Bangladesh has a long history in demonstrating best practices on disaster risk management, having implemented a series of policies and investments aimed at strengthening resilience against climate-related disasters and leveraging community-led action. For example, the Bangladesh Delta Plan 2100 adopted in October 2018 includes a holistic and long-term integrated plan to steer the opportunities and vulnerabilities created by climate change. The need for further adaptation is also recognized in the National Adaptation Plan (NAP) adopted in October 2022, which sets out priorities and interventions to promote climate resilience in essential sectors, including agriculture, water resources, aquaculture and fisheries, livestock and urban areas.⁸

Alongside the physical impacts of climate change, Bangladesh could also suffer negative financial impacts from the transition to a lower carbon economy. This could be driven by national policies, such as future policies designed to achieve Bangladesh's Nationally Determined Contribution (NDC) commitment to reducing emissions by 21.85% by 2030 (conditional on international financing).⁹ If the government enacts decarbonization policies, there will be increased financial pressures on the highest emitting or energy consuming sectors and companies. More immediately, Bangladesh has an export partner to the European Union (EU) is exposed to transition risk induced by the EU's Carbon Border Adjustment Mechanism (CBAM). The CBAM is a tool used to put a fair price on carbon emitted during the production of carbon intensive goods imported into the EU.¹⁰ This initially applies to certain sectors such as Cement, Steel, Fertilizers, etc. and will be expanded to include all sectors covered by the EU Emissions Trading Scheme by 2030. This will increase costs to Bangladesh's export products covered by the CBAM expansion in the future since Bangladesh is yet to adapt a comparable carbon tax or emissions trading scheme.

However, these risks also create significant new financing opportunities for those Banks and Finance Companies that have the right strategies and systems in place. In particular, corporate and retail businesses will require additional financing to invest in technologies or

⁶Bangladesh Bureau of Statistics, 'Quarterly Report on Crop Statistics and Agricultural Labour Wage'. https://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/16d38ef2_2163_4252_a28b_e65f60dab8a9/2024-04-04-05-48-d00d98986368326b82adfc782251e2e7.pdf

⁷Global Labor Institute & Schrodgers, 'Higher Ground? Report 1: Fashion's Climate Breakdown & its Effect for Workers'. <https://mybrand.schrodgers.com/m/4d1525191f60ff7/original/GLI-Schrodgers-Higher-Ground-Report-1.pdf>

⁸Government of the People's Republic of Bangladesh, 'National Adaptation Plan of Bangladesh (2023-2050)'. https://moef.portal.gov.bd/sites/default/files/files/moef.portal.gov.bd/npfblock/903c6d55_3fa3_4d24_a4e1_0611eaa3cb69/National%20Adaptation%20Plan%20of%20Bangladesh%20%282023-2050%29%20%281%29.pdf

⁹ Government of the People's Republic of Bangladesh, 'Nationally Determined Contributions (NDCs) 2021'. https://unfccc.int/sites/default/files/NDC/2022-06/NDC_submission_20210826revised.pdf

¹⁰European Commission, 'Carbon Border Adjustment Mechanism (CBAM)'. <https://trade.ec.europa.eu/access-to-markets/en/news/carbon-border-adjustment-mechanism-cbam>

changes to reduce their carbon emissions and adapt to the physical impacts of climate change. To achieve the emissions reduction goals outlined in Bangladesh's NDCs, significant investments will be required to expand renewable energy, improve energy efficiency, develop green infrastructure, and reduce agricultural emissions. These investments will be needed across a range of sectors, including Energy, Industrial Processes and Product Use, Agriculture, Forestry and other Land Use, and Waste.

Investments in mitigation and adaptation across the economy will require an increase in private sector investment, supported by financing from Banks and Finance Companies to help reduce the impact of specific hazards related to climate change. In addition, these investments will reduce the risks associated with corporate counterparties' physical and transition risk exposures by making them more resilient to physical risks and less exposed to transition risks as a result of lower emissions. Consequently, alongside the risks posed by the transition to a low carbon economy and the physical risks of climate change, Banks and Finance Companies can also benefit from the increased financing opportunities available in key sectors in the local economy.

Responding to the risks presented by climate change is a material challenge to Banks and Finance Companies due to their novelty and unique characteristics. Guideline on Climate Risk Management for Banks and Finance Companies has been issued to provide support to Banks and Finance Companies on how to confront the challenges posed by climate change. In developing this guideline, Bangladesh Bank has incorporated emerging international standards and best practice relating to climate risk management, including the guidelines and findings set out by other Central Banks, and key industry body publications providing practical and technical details on implementing climate risk management, such as:

- i. Central Bank policies and guidelines, such as the BCBS's principles for the effective management and supervision of climate-related financial risks.¹¹
- ii. Thematic reports on climate risk management progress by central banks, such as the Bank of England's thematic feedback from reviewing the implementation of Supervisory Statement 3/19 for both banks and insurers.¹²
- iii. Key scenario analysis and climate stress testing reports, reviews and recommendations, such as the NGFS publications¹³, thematic feedback from

¹¹The BCBS are the global standard setter for the prudential regulation of banks. They set out high level expectations on how banks should manage climate related financial risks and how supervisors should oversee them. See: BCBS, 'Principles for the effective management and supervision of climate-related financial risks'. <https://www.bis.org/bcbs/publ/d532.htm>

¹²Bank of England, 'Managing climate-related financial risk – thematic feedback from the PRA's review of firms' Supervisory Statement 3/19 (SS3/19) plans and clarification of expectations'. <https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2020/managing-the-financial-risks-from-climate-change.pdf>; Bank of England, 'Thematic feedback on the PRA's supervision of climate related financial risk and the Bank of England's Climate Biennial Exploratory Scenario exercise'. <https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2022/october/managing-climate-related-financial-risks.pdf>

¹³The NGFS provide a standardized set of climate scenarios to help both financial institutions and supervisors to assess physical and transition risks over different timelines. See: NGFS, <https://www.ngfs.net/en>

- Central Banks following central supervisory scenario analysis exercises,¹⁴ and emerging literature on short term scenario analysis.¹⁵
- iv. Transition Plan recommendations from bodies such as the Transition Plan Taskforce (TPT)¹⁶.
 - v. Reporting and disclosure standards, including the International Sustainability Standards Board (ISSB) IFRS S1 and S2 standards.¹⁷

2. Objective

- a. A core function of Bangladesh Bank is to regulate and supervise Banks and Finance Companies to maintain financial system robustness. To effectively uphold this mandate amid evolving environmental challenges, it is essential to systematically incorporate climate risk into regulatory and supervisory practices.
- b. To promote a greener and more climate-resilient financial system, Bangladesh Bank (BB) has introduced a series of policies including Guideline on Sustainability and Climate-related Financial Disclosure, adopting IFRS S1 and IFRS S2. Banks and Finance companies are also required to disclose their financed emissions and align their targets with Bangladesh's Nationally Determined Contributions (NDCs) as well as their own decarbonization strategies.
- c. This guideline outlines Bangladesh Bank's expectations concerning the effective management of climate risk under the current prudential framework. The guideline is also structured to facilitate Banks and Finance Companies' growing demand for channelling finance towards 'green initiatives', including climate mitigation and adaptation solutions. This includes details on how Banks and Finance Companies are expected to consider climate risk – as drivers of existing categories of risk – when formulating and implementing their business strategy, governance and risk management frameworks. The expectations outlined are applicable to all Banks and Finance Companies in Bangladesh and are calibrated based on the significance of their climate risk exposures and the complexity of their operations.

3. Definition and Characteristics of Climate Risk

- a. **Climate risk** refers to the financial impact of a changing climate, including more frequent extreme weather events and gradual changes in climate, environmental

¹⁴See for example: European Central Bank, 'Results of the 2022 climate risk stress test of the Eurosystem balance sheet'. https://www.ecb.europa.eu/press/economic-bulletin/focus/2023/html/ecb.ebbox202302_06~0e721fa2e8.en.html

¹⁵See for example: University of Exeter, 'No Time To Lose New Scenario Narratives for Action on Climate Change'. <https://greenfuture.solutions.com/wp-content/uploads/2023/09/No-Time-To-Lose-New-Scenario-Narratives-for-Action-on-Climate-Change-Full-Report.pdf>; NGFS 'NGFS Short-term Climate Scenarios for central banks and supervisors' <https://www.ngfs.net/en/publications-and-statistics/publications/ngfs-short-term-climate-scenarios-central-banks-and-supervisors>

¹⁶The TPT set out best practice on how to develop credible and sufficiently detailed transition plans. This includes both general guidance and sector specific guidance including financial institutions.

¹⁷The ISSB's IFRS S1 and S2 standards establish global sustainability disclosure standards. These standards incorporated the main findings of the Taskforce for Climate-related Financial Disclosures (TCFD), as well as SASB Standards that are a source of guidance for applying IFRS S1.

degradation, such as air, water and land pollution, water stress, biodiversity loss and deforestation, and changes as a result of the transition to a lower carbon economy.

- b. **Climate-related financial risks** refer to the potential risks that may arise from climate change or from efforts to mitigate climate change, their related impacts, and their economic and financial consequences. Climate risk and climate-related financial risks are used interchangeably in this Guideline. Climate risk is comprised of two main drivers: physical Risk and Transition Risk.
- c. **Physical risk** refers to direct and indirect economic impacts of damage to people, physical assets, and broader economies and markets. They can stem from event-driven (acute) physical risks such as floods, cyclones, and heatwaves, and from longer-term (chronic) shifts in climate patterns such as sea level rise or changes in rainfall patterns. These changes in the weather and climate are referred to as ‘physical risk drivers’.

Key physical risks in Bangladesh include, but are not limited to:

- i. Tropical cyclones
 - ii. River and coastal flooding
 - iii. Heat stress
 - iv. Drought and water stress
- d. **Transition risk** refers to the direct and indirect impacts of the transition to a lower-carbon economy. Transition risk can be triggered by the development of policy or regulation in response to climate change, technological change or disruption, or changes in market sentiment and preferences relating to climate change. These triggers are referred to as ‘transition risk drivers’.
 - e. Key transition risks in Bangladesh include, but are not limited to:
 - i. Domestic policy and emission reduction targets. An example of a transition related policy is the carbon tax for second cars, which may impact sales of internal combustion engine cars. Further policies may relate to emissions or energy efficiency standards for cars.
 - ii. Export risks such as the EU CBAM or the EU Strategy for Sustainable and Circular Textiles.
 - f. The distinctions between climate risk and E&S risk shall be considered carefully:
 - i. E&S risk is broader than climate risks due to the inclusion of areas such as ‘social’ risk.
 - ii. The concept of ‘environmental risk’ is also broader than ‘climate risk’. According to the Network for Greening the Financial System (NGFS), environmental risks refer to 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. While climate change also leads to environmental degradation, as an increase in average temperatures significantly impacts biodiversity and ecosystems, not all environmental degradation is a result of climate change.
 - g. The environmental risk within E&S risk uses an inside-out perspective, considering the potential impact Banks and Finance Companies have on the environment. Climate

risk, however, uses an outside-in perspective, considering how both physical risks and transition risks will impact Banks and Finance Companies, including indirectly through counterparties in their portfolio. Climate risk is therefore financial risk posed by physical and transition risks.

- h. **Anthropogenic emissions** arise from, inter-alia, the burning of fossil fuels, deforestation, land use and land-use changes, livestock production, fertilisation, waste management and industrial processes.
- i. **Climate change** means a change in the climate system which is caused by significant changes in the concentration of greenhouse gases arising from human activities and which is in addition to natural climate change that has been observed during a considerable period.
- j. **Climate risk adaptation** refers to the adverse effects of climate change and taking appropriate action to prevent or minimize the damage they can cause, or taking advantage of opportunities that may arise. Examples of adaptation measures include large-scale infrastructure changes, such as building climate resilience to protect against sea-level rise, as well behavioral shifts, farmers adjusting planting calendars in response to changing rainfall patterns. In essence, adaptation can be understood as the process of adjusting to the current and future impact of climate change.
- k. **Climate risk mitigation** refers to the less severe impacts of climate change by preventing or reducing the emission of greenhouse gases (GHG) into the atmosphere. Mitigation is achieved either by reducing the sources of these gases e.g., by increasing the share of renewable energies, or establishing a cleaner mobility system or by enhancing the storage of these gases e.g., by increasing the size of forests. In summary, mitigation is human intervention that reduces the sources of GHG emissions and/or enhances the sinks.
- l. **Greenhouse gases** include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). This is consistent with the GHG Protocol Corporate Accounting and Reporting Standard, which covers the accounting and reporting of the seven GHGs covered by the Kyoto Protocol.¹⁸
- m. **Macroeconomic transmission channels** refer to the mechanisms by which climate risk drivers affect macroeconomic factors, such as labor productivity and economic growth, and how these, in turn, may have an impact on Banks and Finance Companies through an effect on the economy. Macroeconomic transmission channels also capture the effects on macroeconomic market variables such as interest rates, inflation, commodities, and foreign exchange rates.
- n. **Microeconomic transmission channel** refers to the mechanism through which climate risk drivers affect Banks and Finance Companies counterparties, potentially resulting in climate-related financial risk. This includes direct effects on Banks and Finance Companies, arising from impacts on their operations and their ability to fund themselves.

¹⁸ GHG Protocol, "Corporate Standard". <https://ghgprotocol.org/corporate-standard>

Microeconomic transmission channels also capture the indirect effects on specific financial assets held by Banks and Finance Companies (e.g. bonds, certificates of deposits and equities).

3.1 Drivers and Transmission Channels

- a. Physical and transition risk drivers (together, ‘climate risk drivers’) can impact economic activities, in turn impacting Banks and Finance Companies and the financial system more broadly. As defined above, these impacts can be through both microeconomic transmission channels and macroeconomic transmission channels. In addition, physical and transition risks can trigger further losses, stemming directly or indirectly from legal claims (commonly referred to as “liability risk”) and reputational loss as a result of the public, Banks and Finance Companies’ counterparties and/or investors associating the Bank or Finance Company with adverse environmental impacts (“reputational risk”).

Examples of Transmission Channels in Bangladesh

To illustrate the concept of transmission channels and how they can impact the economy, three examples relevant to Bangladesh are provided. These examples focus on one type of transmission channel only and are not exhaustive.

Agricultural Sector: productivity channel

Agricultural production can be impacted by both excessive water (such as river flooding) and lack of water (such as drought), extreme heat, and cyclones. Crops are dependent on soil and water conditions, so physical risks can directly reduce crop yields. Heat stress can also reduce productivity through reducing the ability of employees to work and increasing heat-related illness. This channel can directly impact the revenue of agricultural producers.

RMG Sector: compliance costs from exports

The RMG Sector is materially dependent on exports to the EU, and is, therefore, subject to increased transition risk arising from EU regulations. For example, pressure from the EU to reduce emissions, increase sustainability standards and disclosures or reporting, can increase compliance costs for the RMG sector by increasing ongoing operational costs or leading to capital expenditure requirements.

Power Sector: stranded assets channel

Bangladesh’s power sector is exposed to different types of stranded asset risks driven by the energy transition. Fossil fuel infrastructure such as coal or liquid natural gas faces the risk of becoming economically unviable before the end of its operational lifetime. This could be due to rising fossil fuel costs (e.g. due to carbon prices) or reduced demand (e.g. due to renewable energy availability or energy efficiency improvements). Besides, renewable energy investments may become stranded if the country’s transmission and distribution infrastructure is not upgraded to handle intermittency of energy generation and overproduction, amongst other issues. Thus renewable energy generated power may be underutilized or stranded due to ‘curtailment’ by the grid operator.

- b. The effects of climate risk drivers, both through micro and macroeconomic transmission channels, can interact with and exacerbate existing risk categories – in particular, credit risk, market risk, liquidity risk, operational risk, and reputational risk. These categories may be impacted simultaneously. A high-level graphical overview of this is given in Table 1: Climate Risk Drivers. A longer (non-exhaustive) list of examples of these impacts are set out further below in Table 2: Detailed Climate Risk Drivers, based on the Basel Committee on Banking Supervision (BCBS) ‘Climate related risk drivers and their transmission channels’ publication.¹⁹
- c. Different sectors have different levels of sensitivity to specific climate hazards. Physical risks are particularly impactful for those sectors that are most sensitive to different hazards. For example, Agriculture, Forestry and Fishing are highly sensitive to a range of hazards. Acute events, such as flooding and wildfires, can destroy crops, farming equipment, buildings and other infrastructure, as well as endangering workers.²⁰ Chronic hazards, such as long-term changes in temperature or rainfall patterns and subsequent impacts on water availability can reduce crop yields over time.²¹ Other sectors heavily impacted by physical risk include Healthcare, Energy, Mining, Construction, Transportation and Infrastructure, and Tourism. Risks are also dependent on geographical features such as elevation, topography, coastline exposure, and other relevant features. For example, exposure to coastal flooding is much higher for those living on a low-lying coastline.
- d. Transition risk is particularly impactful for those sectors associated with high emissions, including Energy, Mining, Manufacturing, Construction, Transportation, and Agriculture. Particular attention should be paid to those sectors heavily involved in or exposed to the fossil fuel value chain, including extracting, transporting, refining, distribution and use of fossil fuels including coal, oil, and gas.

Table 1: Climate Risk Drivers

Climate risks	Economic transmission channels	Financial risks
Physical risks Acute risks: i. Floods ii. Cyclones iii. Heatwaves Chronic risks:	Microeconomic Affecting businesses: i. Property damage and business disruption through climate-related impacts ii. Increased business costs related to emissions	Credit risk i. Increased probability of default / loss given default ii. Collateral depreciation

¹⁹Basel Committee on Banking Supervision, ‘Climate-related risk drivers and their transmission channels’. <https://www.bis.org/bcbs/publ/d517.pdf>

²⁰Gould et al, ‘The impact of coastal flooding on agriculture: A case-study of Lincolnshire, United Kingdom’. <https://onlinelibrary.wiley.com/doi/10.1002/ldr.3551>; Agricultural Economic Insights, ‘How does Wildfire Affect U.S. Agriculture’. <https://aei.ag/overview/article/wildfire-smoke-impact-agriculture>; Mazhar et al, ‘Impacts of salinization caused by sea level rise on the biological processes of coastal soils - A review’ <https://www.frontiersin.org/journals/environmental-science/articles/10.3389/fenvs.2022.909415/full>

²¹ See for example: FAO, ‘Drought and Agriculture’. <https://www.fao.org/land-water/water/drought/droughtandag/en/>

i. Sea level rise ii. Long-term changes in rainfall patterns	iii. Stranded assets Affecting households: i. Property impacts through direct physical damage or transition-policies ii. Loss of income through health impacts	Market risk • Impact on valuations of equities, fixed income, commodities, derivatives etc
Transition risks i. Policy & legal risks such as carbon pricing ii. Technological development risk iii. Market risks such as changes in consumer preferences, price changes related to supply and demand dynamics iv. Reputational risks	Macroeconomic i. Climate risks reducing demand for products and services due to reduced GDP, employment, etc ii. Pricing changes through structural changes, supply shocks etc iii. Changes in consumer behaviour such as consumption patterns iv. Other impacts on international trade, government revenues, fiscal space, output, interest rates and exchange rates	Operational risk i. Operational costs due to physical risk impacts ii. Forced closure of key facilities iii. Supply chain disruption.
		Liquidity risk i. Refinancing risk ii. Increased demand for liquidity iii. Precautionary deposit withdrawal.

- e. The unexpected, sudden and severe the changes in response to transition risk – such as climate-related policies, technological innovation, and changes in behavior—the higher the level of transition risk. In turn, more transition risk reduces long-term physical risk, as lower emissions reduce the average temperature change and the associated physical risk impacts. Lower transition risk, whereby changes in policies, technology and behaviors do not occur, are associated with higher emissions and consequently higher levels of physical risk.
- f. Physical risk is generally accepted to increase in the medium to long term, particularly under high emissions ‘scenarios’ with low transition risk. Physical risk is broadly considered to be ‘baked in’²² from the short to medium term and some level of increased physical risk is unavoidable as the lag between past emissions and temperature increases will lead to further climate change regardless of future emissions pathways. In the medium to long term, the projected temperature becomes much more dependent on the transition risk scenario followed.

²²This is due to the lagged effects of greenhouse gas emissions. See for example: UK Climate Change Committee, ‘Briefing note on time lags in the climate system’. <https://www.theccc.org.uk/wp-content/uploads/2019/07/Briefing-note-on-time-lags-in-the-climate-system-Met-Office.pdf>

Table 2: Detailed Climate Risk Drivers

	Microeconomic transmission channels	Macroeconomic transmission channels
Credit Risk	i. Physical risks such as flooding can increase the credit risk of counterparties by damaging physical assets (e.g. housing or factories), reducing revenues and productivity, or increasing costs (e.g. due to new adaptation investments). ii. Transition risk can increase credit risk of counterparties under different transition scenarios, directly impacting demand and revenues (e.g. due to government policy or changes in consumer sentiment), costs (e.g. through carbon tax or energy price changes) or other impacts.	• Physical risks can lead to increases in human mortality, declines in labor productivity, and damage to important national assets, all of which can impact key macroeconomic variables such as GDP, employment, or interest rates. • Transition risk can lead to impacts on the broader economy through asset stranding and impacts on corporate profitability, and consequently impact GDP, employment, interest rates, and other key macroeconomic variables.
Market Risk	i. Physical risk can result in valuation changes to real or financial assets due to new information about physical risk exposures and vulnerability. ii. Transition risk drivers may generate an abrupt repricing of securities and derivatives, for example for products associated with industries affected by asset stranding.	i. The same microeconomic risks can lead to macroeconomic transmission channels. For example, physical or transition risks impacting sovereign risks may impact the value of Bank or Finance Company collateral to secure funding and access liquidity.
Liquidity Risk	i. Physical risks may lead to an increase in deposit or credit drawdowns, or impact liquidity availability through precautionary demand for liquidity by financial markets. ii. Transition risk may change the behavior of financial markets and Banks and Finance Companies' customers. An abrupt repricing of securities, for instance due to asset stranding, may reduce the value of Banks and Finance Companies' high quality liquid assets, thereby affecting liquidity buffers.	N/A

Operational Risk	i. Physical risks may impact directly owned assets, or surrounding infrastructure impacting Banks and Finance Companies’ operational capacity. ii. Transition risk arising from changing consumer sentiment regarding climate issues can lead to liability risks for the Bank or Finance Company as a result of scandals caused by the financing of environmentally controversial activities.	N/A
Reputational Risk	i. Transition risks may impact the reputation of Banks and Finance Companies through ‘greenwashing’, or failure to meet emissions reduction targets.	N/A

4. Governance

Banks and Finance Companies shall incorporate climate risk into their existing governance framework, including the Governance bodies, internal control framework, and Risk Appetite. Bangladesh Bank’s ‘Prudential Regulations for Banks’ (2024), specifically the Corporate Governance section, and ‘Integrated Risk Management Guidelines for Financial Institutions’ (2016), ‘Risk Management Guidelines for Banks’ (2018) and Sustainability and Climate-related Financial Disclosure for Banks and FCs (2023) shall be taken into consideration.

4.1. Governance Bodies

- a. A Bank or Finance Company’s Board of Directors shall have a clear understanding of the risks inherent in business lines and to monitor changes in the level of risk, as set out in Bangladesh Bank’s ‘Integrated Risk Management Guidelines for Financial Institutions’ (2016), ‘Risk Management Guidelines for banks’ (2018) and Sustainability and climate related financial disclosure for banks and finance companies (2023). This requires Banks and Finance Companies to identify and assess the materiality of climate risk in the short, medium and long term to inform their governance, strategy, and risk management processes. The assessment of materiality shall consider and identify concentrations in climate risk at the sectoral, geographical, and products & services level, as well as the opportunities arising from climate change in the same categories. The approach to climate risk assessments is covered in Chapter 5: Climate Risk Management.
- b. There shall be clear evidence of monitoring and intervening on climate risk developments within bank’s portfolio and the broader business environment. The climate risk materiality assessment shall be appropriately documented and updated by senior management to enable the Board of Directors to fulfill their duties and ensure that they

maintain an up-to-date understanding of the distinctive physical and transition risk exposures to the business. A sound understanding of the materiality of climate risk shall also inform the business strategy on an ongoing basis, as covered in Chapter 5: Strategy of Banks and Finance Companies to manage climate risk.

- c. Banks and Finance Companies shall ensure that the board and senior management are provided with sufficient training for capacity building regularly. Effective climate risk governance also requires appropriate capacity building at the board, relevant sub-committees, senior management and staff level. Capacity building and training plans shall also be developed for relevant staff in line, and tailored to specific roles to enable staff to meet their updated responsibilities across the three lines of defense model, as covered in Section 6.1.1: Risk Culture.

4.2. Responsibilities of the Board and Senior Management

- a. The responsibility of the Board of Directors has been described in Bank Companies Act, 1991, amended in 2023 and Finance Company Act. Responsibilities include determining and strategic objectives and associated annual work-plan, significant risk management strategy and policies, internal control management, human resources management and development, and financial management. Climate risk is relevant to these responsibilities and so shall be formally incorporated into the management responsibilities of the Board of Directors.
- b. The Board of Directors shall explicitly allocate roles and responsibilities to its members and relevant sub-committees for climate risk. As set out in Bangladesh Bank's 'Prudential Regulations for Banks'(2024) and 'Policy on Formation of Board and Responsibilities of Directors of Finance Companies' (2024), it is essential to have a specific demarcation of responsibilities and authorities among the Board of Directors and Management Committee over the Bank or Finance Company's affairs. Responsibility for managing the financial risks from climate change shall be explicitly allocated to both a specific individual and to the Board of Directors or to a relevant sub-committee, and the scheduled agendas shall be updated to reflect these changes.
- c. The Board of Directors or relevant sub-committee are expected to monitor the Bank or Finance Company's performance against their climate risk and opportunities strategy and work-plan. This shall be informed by a set of Key Performance Indicators (KPIs) and Key Risk Indicators (KRIs), which shall be tailored to and calibrated against the agreed climate risk strategy and work-plan, as well as the materiality assessment covered in Section 3.1: Governance Bodies. Specific responsibility shall be delegated to senior management for providing regular and timely updates to the board capturing this information.
- d. Banks and Finance Companies shall update organizational structures to incorporate specific roles and responsibilities of climate risk. The impacts of climate risk management and climate opportunities on functions and business units across the organizational structure shall be identified, and senior management roles within impacted functions or business units shall be updated to reflect changes necessary to manage these risks and opportunities. Further changes across the three lines of defense model to incorporate climate risk, as covered in Section 6.1.1: Risk Culture.
- e. Banks and Finance Companies shall ensure that the management of material climate risk is embedded in all the appropriate policies, processes and controls that have been

implemented across all the relevant functions and business units. These include, for example, client onboarding and transaction assessment. Where possible, Banks and Finance Companies shall designate a Key Management Personnel charged with the responsibility of managing the financial risks from climate change to ensure effective and holistic oversight of climate risk.

- f. The Bank or Finance Company's established approach for the assessment of climate risk shall be clearly communicated to all the relevant internal stakeholders across the three lines of defense.
- g. Senior Management of Banks and Finance Companies shall:
 - i. Regularly review the effectiveness of the strategies, policy frameworks, tools and controls and ensure that all material climate risks are addressed in a timely manner; and
 - ii. Provide periodic reports to the Board on climate risks to which the Bank and Finance Companies are exposed.
- h. The Board of Banks and Finance Companies shall also ensure that there is:
 - i. An appropriate collective understanding of climate risk and related issues at both board and senior management level; and
 - ii. Relevant ongoing capacity development and training.

4.3. Internal Control Framework

- a. The internal control framework of the Bank or Finance Company shall be updated to incorporate climate risk. Bangladesh Bank's 'Guidelines on Internal Control & Compliance in Banks' (2016) sets out the importance of an internal control framework to underpin effective risk management, which requires effective allocation of internal control responsibilities, as well as an effective system including reliable information systems.
- b. Banks and Finance Companies shall use the three-lines-of-defense-model for managing climate risk. This model clarifies roles and responsibilities for different functions within the Bank or Finance Company:
 - i. **First Line of Defense:** The first line is responsible for identifying and managing climate risk within their areas, implementing mitigation measures, and integrating climate risk considerations into daily operations and decision-making.
 - ii. **Second Line of Defense:** The Risk Management Division, as defined in section 2.7.5 of Bangladesh Bank's 'Risk Management Guidelines for banks' (2018), is responsible for developing and implementing the climate risk management framework, providing oversight, and guiding the first line of defense.
 - iii. **Third Line of Defense:** Internal Audit is responsible for independently and periodically assessing the first two lines of defense on effectiveness of climate risk management practices and governance.
- c. Banks and Finance Companies must also develop effective systems to identify, measure, monitor and manage climate risks including potential gender-differentiated impacts.

4.4. Risk Appetite

4.4.1. Risk Appetite Framework

- a. The Board of Directors shall define the climate risk appetite, risk tolerance and risk limit. They have the ultimate responsibility for the risks taken by the Bank or Finance Company as set out in the 'Integrated Risk Management Guidelines for Financial Institutions' (2016) and 'Risk Management Guidelines for banks' (2018). Based on the identification and assessment of the materiality of climate risk affecting the Bank or Finance Company, the Board of Directors or relevant sub-committee shall explicitly include climate risk in their risk appetite framework.
- b. Climate risk shall be clearly defined in a Bank or Finance Company's risk register. The risk register may further specify the risk owner, how and how often the different climate risks are measured, assumptions related to each risk, judgement on severity and likelihood, and speed at which risks could manifest. Both physical and transition risks can interact with and exacerbate existing risk categories such as credit risk and market risk, and this interaction may be reflected in the risk register to ensure the most material climate risks to the Bank or Finance Company is understood and that accountability is clearly assigned.
- c. Appetite towards climate risk shall be clearly set out in a risk appetite statement, which shall outline the Bank or Finance Company's position with respect to both physical and transition risks. In turn, this shall inform the business and risk management strategy going forwards. The risk appetite statement shall be supported by appropriate Key Risk Indicators (KRIs) and limits that facilitate monitoring the Bank or Finance Company's position against the risk appetite statement. KRIs are expected to develop or grow more sophisticated over time in line with the growing capabilities of the Bank or Finance Company, which are in turn dependent on their physical and transition risk priorities. Examples include:
 - i. **Total exposure to counterparties with high-physical risks:** this may be broken into exposures to counterparties with high flood, cyclone, heat stress, drought, or other relevant hazards, or aggregated to cover all physical risks. Further breakdowns may be required based on the Bank or Finance Company's financial portfolio (such as sector or geography), based on existing risk metrics such as credit quality, or based on financial product (such as loan book or trading book).
 - ii. **Total exposure to counterparties with high-physical risks that have sufficient adaptation measures or plans in place:** this may be used to track the Bank or Finance Company's support of counterparties in adapting or de-risking to high physical risks or to provide a more accurate reflection of counterparty risk.
 - iii. **Collateral exposure to high physical risks:** this may be broken down into different collateral types and used to assess the sensitivity of the collateral to physical risks.
 - iv. **Potential or actual losses from a physical risk event:** this may capture financial losses following a physical risk hazard or expected losses from a potential physical risk hazard. This may be focused on or broken down by existing risk categories such as credit risk, market risk, operational risk etc.

- v. **Total exposure to counterparties with high-transition risks:** this may be based on exposure to high emitting counterparties, and segmented according to an internal classification of high, medium, or low emissions. This may be based on absolute emissions or emissions intensity. Further breakdowns may be based on the Bank or Finance Company's financial portfolio (such as sector), based on existing risk metrics such as credit quality, or based on financial product (such as loan book or trading book).
- vi. **Weighted average carbon intensity of the loan portfolio:** this captures the portfolio's exposure to carbon-intensive companies, considering the relative weight of the investment compared to the portfolio, and the counterparty's financed emissions intensity.²³
- vii. **Total exposure to counterparties with high-transition risks that have sufficient mitigation measures or plans in place:** this may be used to track the Bank or Finance Company's support of counterparties in mitigating to high transition risks or to provide a more accurate reflection of counterparty risk.
- viii. **Weighted average transition risk / physical risk scores:** this may be used to track total portfolio transition risk or physical risk, with each counterparty or sector-geography combination assigned a risk-level, and the total risk score equal to the average of those risk-levels weighted by the exposure of the counterparty or sector-geography combination.
- ix. **Collateral exposure to high transition risks:** this may be broken down into different collateral types and used to assess the sensitivity of the collateral to transition risks.
- x. **Potential losses from a transition risk event:** this may capture expected financial losses following a transition risk event. This may be focused on or broken down by existing risk categories such as credit risk, market risk, operational risk etc.
- xi. **Green financing metrics:** this may include metrics such as Green Asset Ratio, or total number of green financing products and services or Taxonomy Alignment Ratio.

²³See for example: TCFD, "Carbon Footprinting and Exposure Metrics".
<https://www.tcfddhub.org/Downloads/pdfs/E09%20-%20Carbon%20footprinting%20-%20metrics.pdf>

Examples of sectoral Key Risk Indicators (KRIs)

Steel sector

1. *Total exposure of loans to the Steel sector located in high flood risk areas.*
2. *Total exposure of loans to the Steel sector located in high flood risk areas with credible and effective adaptation measures in place, such as flood barriers.*
3. *Total exposure of loans to the Steel sector with emissions intensity above global or national steel industry emissions intensity.*
4. *Total exposure of loans to the Steel sector with emissions intensity above global or national steel industry emissions intensity with credible and effective mitigation measures in place, such as use of renewable energy.*
5. *Potential losses from a flood event in the steel sector portfolio.*
6. *Potential losses from a carbon price imposition in the Steel sector portfolio.*

- d. KRIs developed to support the risk appetite statement can be used to develop risk limits and subsequently fed into monitoring and escalation procedures for when these limits are at risk of, or have been, breached. These shall consider the long-term nature of climate change, including the ways in which physical and transition risks can increase over time.
- e. For example, the risk appetite statement may set out the Bank or Finance Company's appetite towards physical risk, and be supported by KRIs, risk limits to physical risk, and a relevant risk management strategy. Where risk appetite towards physical risk is low, this may be supported by limits to relevant hazards or other relevant metrics. Where risk appetite towards physical risk is high, this may be supported by a strong risk management framework, and / or limits to high physical risk to counterparties that do not have (or plan to build) sufficient adaptation or derisking measures.
- f. Where Banks and Finance Companies breach these limits, this should be justified and approved following a formal process and based on the mandates assigned by the internal policy.

4.4.2. Capital and Liquidity Planning

- a. Banks and Finance Companies shall assess the impact of climate risk on their capital and liquidity adequacy to address heightened climate risk in line with the risk appetite framework, or to mitigate internal shortcomings in assessing capital and liquidity adequacy with respect to climate risk.
- b. To assess capital adequacy with respect to climate risk, Banks and Finance Companies shall use forward looking assessments over the capital planning horizons. These assessments shall form part of the Bank and Finance Company's ongoing Internal Capital Adequacy Assessment Process (ICAAP).
- c. Banks and Finance Companies are required to improve their approach to capital adequacy assessments on a periodic basis to capture climate risk and reflect potential changes to internal credit risk framework as international best practice evolving over time. The following non-exhaustive list of approaches could be considered as potential avenues to assess climate-related capital needs, and improvements:

- i. Incorporation of climate risk under Pillar 1 capital calculations through the internal ratings-based (IRB) approach. Climate risk would typically be included as part of the Probability of Default (PD) rating systems, and can be incorporated through expert judgement, or through changes in PD as a result of projected impacts from physical or transition risks on corporate-level costs and revenues.
 - ii. Use of climate stress testing as part of Pillar 2 capital calculations to reflect the development of both physical and transition risk scenarios over time. This may be based on specific short-term scenarios, or long-term scenarios. Banks and Finance Companies should consider bringing forward the impacts of physical or transition risks in the long-term scenarios to capture risks in the capital-setting horizon and compare losses under these scenarios to a baseline scenario with no climate risk materialization. Further detail on the use of scenario analysis is covered in Chapter 7: Scenario analysis and stress testing.
 - iii. Amendments to other existing capital assessment approaches such as concentration risk under Pillar 2, which may consider how geographic or sectoral concentrations could lead to high losses from a single climate risk event, which could lead to additional capital requirements.
 - iv. Risk management capability add-ons to reflect current inadequacies in climate risk identification, measurement, management, and monitoring. This may form part of the Bank or Finance Company's management buffer, pending further improvements in data quality or climate risk management capabilities.
- d. As quantification methodologies are still developing globally, this analysis may make use of plausible assumptions and proxies to assess climate risk with respect to capital, which can be improved over time. The methodology used to incorporate climate risk into capital assessments may also require further change as Banks and Finance Companies evolve their accounting approaches to valuations to reflect climate risk, or through changing loan loss provisions related to climate risk, which impact capital through the profit & loss account.
- e. Assessments of adequate liquidity in respect to climate risk are even less advanced than approaches to capital adequacy. Banks and Finance Companies could rely on qualitative assessments of the impact of climate risk on their liquidity adequacy and incorporate this into their Internal Liquidity Adequacy Assessment Process (ILAAP). These assessments are expected to grow in sophistication over time.

5. Strategy of Banks and Finance Companies to Manage Climate Risk

Banks and Finance Companies shall incorporate climate risk into their strategy and key strategic processes, including the development of a Transition and Adaptation Plan and a Counterparty Engagement Plan, and defining the roles and responsibilities in approving and implementing the strategy.

5.1. Strategy Formulation & Integration into Other Policies

- a. Banks and Finance Companies shall formulate a comprehensive strategy to manage climate risk based on their exposure to physical and transition risks. This

strategy shall be fully integrated into the Bank or Finance Company's overall business strategy, risk management framework, and other relevant policies.

- b. The climate risk strategy shall define the Bank or Finance Company's approach to identifying, measuring, monitoring, and mitigating climate risk across all its activities. It shall also outline how the Bank or Finance Company will capitalize on opportunities arising from the transition to a low-carbon economy.
- c. In formulating the strategy, the Bank and Finance Company shall consider the following elements:
 - i. A clear articulation of the Bank and Finance Company's risk appetite for climate risk considering physical and transition risk separately aligned with their overall risk appetite (covered in Section 4.4: Risk Appetite).
 - ii. A thorough assessment of the Bank and Finance Company's exposure to physical and transition risks across all relevant sectors and regions (covered in Chapter 6: Climate risk management). This assessment shall include climate scenario analysis for short, medium, and long-term to understand potential impacts under different climate and economic pathways (covered in Chapter 7: Scenario analysis and stress testing).
 - iii. A description of the risk mitigation measures that the Bank and Finance Company shall implement to address identified climate risk.
 - iv. A plan for monitoring and reporting on climate risk and the effectiveness of mitigation measures. This plan shall be aligned with Bangladesh Bank's 'Guideline on Sustainability and Climate-related Financial Disclosure' (2023).
- d. Banks and Finance Companies shall develop a Transition and Adaptation Plan to enhance their approach to climate risk and align their policies with the transition to a sustainable, low-carbon economy. Transition and Adaptation Plans shall be structured detailing how Bank and Finance Companies plan to decarbonize its lending and investment activities, manage its physical risks by increasing the resilience of its counterparties, and improve internal climate risk management over a specific timeframe.
- e. Banks and Finance Companies shall evaluate their current climate-related strategies and risk management capabilities through a self-assessment against available international best practice such as the thematic recommendations of the Task Force on Climate Related Financial Disclosures (TCFD) principles²⁴, and their plan shall set out how they will develop or strengthen these capabilities over time. A holistic self-assessment shall cover multiple aspects of business operations, for example: counterparty engagement, data, IT infrastructure, appraisal tools/due diligence procedures, etc.. This self-assessment can help to identify gaps, benchmark performance and set a roadmap and plan for Banks and Finance Companies to improve their practices and progress to the next level.
- f. In line with the Transition Plan Taskforce's guidance for Banks²⁵ and the Glasgow Financial Alliance for Net Zero (GFANZ) report on Transition Plans²⁶, a successful

²⁴This may involve looking at the key recommendations of the TCFD across the governance, strategy, risk management, metrics and targets, and disclosures principles, and assessing whether they are exhibiting best practice, developing practice or no / early stage practice.

²⁵Transition Plan Taskforce, 'Banks Sector Guidance'. <https://www.ifrs.org/content/dam/ifrs/knowledge-hub/resources/tpt/banks-sector-guidance-apr-2024.pdf>

Transition and Adaptation Plan shall define ambition levels, intended actions, and accountability mechanisms. Ambition levels outline decarbonization and adaptation targets for all activities, address climate risk, and describe contributions to broader economic transitions, considering risks such as "paper decarbonization"²⁷ and impacts on financing access for vulnerable communities. Intended actions include specific steps to reduce financed emissions or physical risk through mitigation or adaptation financing (respectively), setting targets aligned with Bangladesh's NDCs and National Adaptation Plan (NAP), and integrating climate risk management into governance and financial processes. Accountability involves embedding Transition and Adaptation Plans into business planning, defining clear roles, establishing monitoring mechanisms, and ensuring transparent disclosures.

- g. In setting out the Bank and Finance Company's ambitions and intended actions, reference shall be made to relevant policies and priorities of Bangladesh. In particular, the Transition and Adaptation Plan shall link to:
- i. **Bangladesh's Nationally Determined Contribution (NDC)** which sets out a number of targets to reduce greenhouse gas emissions. Financing opportunities targeted in the Transition and Adaptation Plan should prioritize those sectors and mitigation actions set out in the NDCs.
 - ii. **Bangladesh's National Adaptation Plan (NAP)** which sets out adaptation strategies aiming for climate-resilient development. Financing opportunities targeted in the Transition and Adaptation Plan should prioritize those sectors and mitigation actions set out in the NAP. Private sector financing target of NAP should be a priority of banks and finance companies through the most feasible interventions (among the 113 interventions).
 - iii. **Bangladesh's Climate Fiscal Framework**, which sets out how Bangladesh's fiscal policies will respond to the demand and supply sides of climate funds.²⁸ It considers existing climate finance sources, climate financing gaps, and how to create an enabling environment for private finance flows to implement climate actions, and so the priorities for public and private financing should be reflected in Transition and Adaptation Plans.
 - iv. **Bangladesh Bank's 'Policy Guidelines on Corporate Social Responsibility for Banks and Financial Institutions'**²⁹ (2022), which sets out the expectation that Banks and Finance Companies should spend a minimum of 20% of their total Corporate Social Responsibility fund on Environment and Climate Change mitigation and adaptation.

²⁶GFANZ, 'Financial Institution Net-zero Transition Plans'.
<https://assets.bbhub.io/company/sites/63/2022/09/Recommendations-and-Guidance-on-Financial-Institution-Net-zero-Transition-Plans-November-2022.pdf>

²⁷The TPT defines a paper decarbonisation as "greening the entity's own balance sheet in a way that may not necessarily contribute to greening the economy".

²⁸Government of the People's Republic of Bangladesh, 'Bangladesh Climate Fiscal Framework'.
<https://www.fao.org/faolex/results/details/en/c/LEX-FAOC216237/>

²⁹Bangladesh Bank, 'Policy Guidelines on Corporate Social Responsibility for Banks and Financial Institutions'.
<https://www.bb.org.bd/mediaroom/circulars/gbcrd/jan092022sfdl01e.pdf>

- v. **Bangladesh Bank’s ‘Sustainable Finance Policy for Banks and Financial Institutions’³⁰ (2023)**, which highlights the expectation that Banks and Finance Companies should adopt appropriate ways of using green products, projects or initiatives and should adopt environmentally responsible financing.
 - vi. **Bangladesh Bank’s ‘Policy on Green Bond Financing for Banks and Financial Institutions (FIs)’³¹ (2022)**. Transition and Adaptation Plan should consider how to leverage the climate risk identification and measurement processes discussed as part of their Green Bond Financing Policy and should consider financing in line with the Green Taxonomy presented in the policy.
- h. Banks and Finance Companies shall establish a Counterparty Engagement Plan as part of their climate risk management framework. This plan shall clearly outline short and long-term priorities, focusing on sector-specific and customer-specific risks. The purpose and expectations of climate-related counterparty engagement shall be explicitly defined, with actionable guidance provided to ensure effective implementation. Banks and Finance Companies are expected to link counterparty engagement directly to their overall climate risk management strategy, emphasizing how engagement can open financing opportunities while supporting counterparties in mitigating physical and transition risks. By fostering collaboration, Banks and Finance Companies can help clients adapt to climate-related challenges while reducing their own exposure to material risks. More detail on this is covered in Section 6.1.1: Risk Culture.

5.2. Approval & Implementation of Strategy

- a. The board of directors sets the strategy and the senior management is responsible for implementing those strategies and communicating them throughout the organization. This includes ensuring alignment with the overall business strategy and risk management framework, allocating adequate resources (both human and financial), and establishing clear accountability for implementation.
- b. The climate risk strategy shall clearly define climate risk related time-bound goals, supported by appropriate financial and human resources necessary to achieve these goals, along with timelines for implementation.
- c. The senior management shall review and approve the climate risk strategy at least annually, documenting the approval process and rationale behind strategic decisions. Banks and Finance Companies shall submit their climate risk strategy to Bangladesh Bank for review, following the relevant reporting guidelines. Additionally, Banks and Finance Companies shall be prepared to demonstrate effective implementation of their strategy and compliance with the requirements of these guidelines upon request from Bangladesh Bank.

³⁰Bangladesh Bank, ‘Sustainable Finance Policy for Banks and Financial Institutions’. <https://www.bb.org.bd/mediaroom/circulars/gbcd/dec312020sfd05.pdf>

³¹Bangladesh Bank, ‘Policy on Green Bond Financing for Banks and FIs’. <https://www.bb.org.bd/mediaroom/circulars/gbcd/sep202022sfd05e.pdf>

6. Climate Risk Management

Banks and Finance Companies shall incorporate climate risk into their existing risk management framework and processes. This will include all relevant elements of the risk management framework, as well as specific risk categories including credit risk, market risk, operational risk, reputational risk and liquidity risk.

6.1. Climate Risk Management Framework

Climate Risk Management Framework is a structured approach designed to identify, assess, monitor, mitigate, and report on climate risks that may materially impact a Banks and Finance Company's overall risk profile. This framework aligns with regulatory expectations set forth in the 'Integrated Risk Management Guidelines for Financial Institutions' (2016) and 'Guideline on Sustainability and Climate-related Financial Disclosure' (2023) emphasizing the importance of integrating climate risk into the broader risk management infrastructure while accounting for its unique characteristics. It is essential for Banks and Finance Companies to establish a robust Climate Risk Management Framework that encompasses a clear risk culture, effective risk identification processes, accurate risk measurement tools, appropriate risk mitigation and monitoring strategies, and comprehensive risk reporting and evaluation mechanisms.

6.1.1. Risk Culture

- a. Banks and Finance Companies shall cultivate a strong and integrated risk culture that incorporates climate risk outlined in Bangladesh Bank's 'Integrated Risk Management Guidelines for Financial Institutions' (2016) and 'Risk Management Guidelines for Banks' (2018). As the business of banking inherently involves risk-taking, it shall ensure that climate-related risks are appropriately managed. A sound and consistent risk culture is a key component of effective climate risk management. This culture shall be rooted in a thorough understanding of the climate risk the Bank and Finance Company faces, and how climate risk is measured and monitored.
- b. The Board of Directors and Senior Management shall integrate climate risk into the risk culture through:
 - i. **Policies:** Establishing clear policies and procedures for identifying, assessing, mitigating, and reporting climate risk.
 - ii. **Use of the three lines of defense model** explicitly assigning responsibility for managing climate risk (covered in Section 3.3: Internal control framework).
 - iii. **A counterparty engagement plan.**
 - iv. **Communication:** Actively communicating the Bank and Finance Company's climate risk strategy, risk appetite, and policies to all staff.
 - v. **Training:** Providing comprehensive training to staff on climate risk and their responsibilities in managing those risks.
 - vi. **Leading from the top:** Demonstrating a commitment to sustainable practices and responsible risk taking through the Bank or Finance Company's actions and decisions.
- c. Banks and Finance Companies shall set out detailed plans on how engagement with counterparties will be used to meet their strategic goals set out in their Transition and Adaptation Plan. These counterparty engagement plans shall set out how they will collaborate with counterparties to obtain relevant data, assess the counterparty's risk and opportunities, and work with them going forwards. This may include:

- i. **Priority engagements**, such as key sectors or segments. This should be based on the most material sectors and segments to the Bank and Finance Company, and the exposure of the sectors and segments to climate risk.
 - ii. **Key data and information collection aims**, such as determining the counterparty's-
 1. Scope 1 and 2 emissions and physical risk exposure;
 2. Assessing the counterparty's strategic plans over the next 5–10 years;
 3. Assessing existing mitigation and adaptation capacity, including specific mitigation investments or measures already in place or planned;
 4. Climate risk management capabilities or 'adaptive capacity', or if in place;
 5. The transition and adaptation plan of the counterparty.
 - i. **Counterparty engagement methods**, including approaches to ensure that the counterparty increases their transition and physical risk management efforts. This can include the use of incentives such as favorable interest rates, disincentives, or ways to influence the counterparty such as sharing information on the impact of climate risk in their sector or on the opportunities and benefits of making such investments.
 - ii. **Counterparty assessment and monitoring frameworks**, such as how to assess the counterparty transition and adaptation plan and monitor progress against it.
 - iii. **The link to green financing strategies**, such as developing a structured approach to identifying technologies and processes needed to reduce GHG emissions or reduce physical risks, and helping the counterparty to finance investment plans that are compatible with national or sectoral targets.
 - iv. **Risk mitigation approaches**, such as the use of de-risking mechanisms such as covenants, insurance, Green/Climate Credit Guarantee, hedging, risk transfer mechanisms, etc. These approaches shall be tailored to the Bank and Finance Company's risk profile.
 - v. **The link to broader strategic aims** may include how to assess the impact of a counterparty on achieving the Bank and Finance Company's emissions or physical risk reduction targets in line with portfolio or sectoral benchmarks, such as those pathways based on NDC targets, NAP, the International Energy Agency (IEA), Net Zero Emissions by 2050 scenario.³²
- d. Senior management holds ultimate responsibility for embedding climate risk into existing counterparty engagement processes and ensuring the visibility of climate risk prioritization across the Bank and Finance Company. This requires consistent communication and clear allocation of responsibilities at all levels. Active engagement by senior leadership, including regular monitoring of the Counterparty Engagement Plan's implementation, is crucial for demonstrating the importance of integrating climate risk into counterparty engagement. Such leadership ensures that engagement is both strategic and operationally effective, driving meaningful action among counterparties while aligning with the Bank and Finance Company's broader sustainability goals.
- e. Banks and Finance Companies are expected to provide opportunities for staff to upskill through targeted training programs, access to educational resources, and sector-specific insights. For example, training may enable loan officers to discuss with their client's adaptation technologies in agriculture or decarbonization strategies in manufacturing

³²IEA, 'Net Zero Emissions by 2050 Scenario (NZE)'. <https://www.iea.org/reports/global-energy-and-climate-model/net-zero-emissions-by-2050-scenario-nze>

and explore new financing opportunities, including those that support women-led businesses or vulnerable groups. Supporting mechanisms and resources, such as central specialist support teams to assist loan officers, can be vital for enabling effective engagement. These specialist teams can provide expertise on assessing counterparty capabilities, evaluating transition or adaptation plans, and sharing best practices across sectors.

6.1.2. Risk Identification

- a. Banks and Finance Companies shall identify climate risk at the level of key sectors, geographies, and related to all material products, activities, processes, systems, and their vulnerability to these risks. Effective risk identification is a critical step in the management of climate risk, as it forms the basis for understanding and addressing potential threats that may impact a Bank and Finance Company's resilience. This assessment shall include both physical risks and transition risks, considering various time horizons (short, medium, and long-term).
- b. The risk management framework should encompass on-balance sheet risks and off-balance sheet risks, with appropriate consideration of both financial and non-financial risks that the Bank and Finance Company is currently exposed to and for risks that the Bank and Finance Company may be exposed to going forward. Banks and Finance Companies are responsible for implementing a regular process for identifying all material risks and including these in a comprehensive internal risk inventory.
- c. Banks and Finance Companies shall account for the timelines of climate risk: short-to-medium term threats (e.g., monsoon variability, cyclones or policy shifts such as the EU CBAM) and long-term structural shifts (e.g., sea-level rise or decarbonization of energy grids). Even with short-term tenors, assessing medium to long-term climate impacts remains essential. Rollover risk – the risk that a borrower may be unable to refinance debt due to climate risk impacts on their business or assets, shall be explicitly considered, even for short-term loans.
- d. Banks and Finance Companies may leverage climate projections from localized sources (e.g. the Bangladesh Meteorological Department³³ (BMD), related ministry) or global sources (e.g., IPCC AR6 scenarios) on physical risks, and data on sectoral emissions for transition risks, to assess portfolio vulnerabilities.
- e. Banks and Finance Companies are expected to properly document their assessments of climate risk in terms of their business environment. For instance, it could be reflected as part of their regular monitoring of material or emerging risks, or evidenced through management board discussions.

6.1.3. Risk Measurement

- a. Banks and Finance Companies shall adopt both quantitative and qualitative approaches to evaluate the magnitude of physical and transition risks across various time horizons. Accurate measurement of climate risk is essential for developing appropriate mitigation and management strategies.
- b. This should be done at both portfolio level and transaction-level due diligence.

³³ Bangladesh Meteorological Department. <https://live6.bmd.gov.bd/>

- c. For physical risks, Banks and Finance Companies shall conduct an assessment of the relevant physical hazards considering the geographic location (e.g., current and projected frequency and intensity of extreme weather events), the sensitivity of the sector to the relevant hazards, as well as the Bank or Finance Company's exposure level. This shall be used to determine the potential impacts of physical risks on assets, borrowers, and business continuity.³⁴ Banks and Finance Companies are expected to assess the exposure of the portfolio to physical risk by analyzing the geographical and sectoral distribution of Bank or Finance Company lending relative to the physical risk profiles for the hazards considered (e.g., floods, and droughts).
- d. Transition risks require analysis of policy changes or legal risks, technological shifts, market trends, and reputation risks. Factors such as exposure to the CBAM, decarbonization targets, and evolving regulations shall be factored into the measurement process. A transition risk assessment typically involves transition-sensitive economic sectors according to frameworks determining exposure to a potential transition risk through the emission levels, emission intensity of a counterparty or sector (a Bank or Finance Company's 'financed emissions'), or based on further information such as exports to CBAM countries. Banks and Finance Companies may also consider potential risks embedded in supply chains, as disruptions from regulatory changes or technological advancements could indirectly impact borrowers or counterparties. Banks and Finance Companies are expected to assess the exposure of the portfolio to transition risk by considering the sectoral or sub-sectoral distribution of loans and investments relative to the transition risk posed by the counterparty or sector.
- e. Examples of approaches to physical risk and transition risk assessment, as well as detail on the calculation of 'financed emissions' (which is key in measuring transition risk), are set out in Annex 1 (on physical risk), Annex 2 (on transition risk assessment), and Annex 3 (on financed emissions assessment). However, as approaches evolve over time and several different approaches to measuring climate risk exists, Banks and Finance Companies shall ensure the climate risk measurement methodologies are tailored to their business models and risk profiles, considering both qualitative factors (such as expert judgment and scenario narratives) and quantitative factors (such as quantification of potential climate risk losses through use of climate scenario analysis and stress testing).
- f. Banks and Finance Companies should also ensure continuous improvement of climate risk measurement by integrating emerging best practices, enhancing risk classification procedures, and upgrading their methodologies over time. The progression toward quantification shall encompass financial assessments of climate risk scenarios, forward-looking stress tests, and the integration of findings into pricing, capital planning, and strategic decision-making.
- g. Banks and Finance Companies shall support their risk measurement through robust data collection systems and central data management frameworks. Effective data management is essential for gathering accurate, localized, and counterparty or sector-specific information that can enhance the precision of risk assessments. Examples of key data collection needs are set out in Annex 4. Qualitative methods or the use of proxies may be necessary to supplement quantitative approaches where data gaps or uncertainties persist.

³⁴ This may use tools such as the Climate Vulnerability Index. By applying the district level Climate Vulnerability Index (CVI) for Bangladesh, and counting the total amount of climate vulnerable loans, banks may apply the CVI. Other public or private tools can also be used for this purpose.

As climate risk has distinctive characteristics, Banks and Finance Companies are expected to consider adapting their IT systems to systematically collect and aggregate the necessary data in order to assess their exposures to these risks.

- h. Banks and Finance Companies should assess climate-related losses in their portfolio using their central data management frameworks. This data shall be used to assess current exposure and refine their climate risk measurement methodologies. This includes developing and maintaining a comprehensive Climate Loss Database to track realized losses, such as Non-Performing Loans (NPLs) linked to climate-related events-monsoon floods or transition-related policies, etc. Relevant data shall be systematically recorded, including:
 - i. Type of climate risk such as flood event and its severity.
 - ii. Impacts on counterparty credit ratings / on NPLs due to crystallized physical risks such as floods.
 - iii. Impacts on counterparty credit ratings / on NPLs due to transition-risk related events such as increases in energy prices.
- i. Banks and Finance Companies must document their measurement methodologies and processes, clearly stating assumptions, uncertainties, and any limitations. Establishing a structured framework for regularly reviewing the appropriateness of identification, measurement, and mitigation methodologies processes will support meaningful refinement and enhance resilience against climate risk.

6.1.4. Risk Mitigation and Monitoring

Climate risk can lead to large financial impacts. Moreover, the impact of certain climate events, such as natural disasters intensified by climate change, cannot be fully controlled. Risk mitigation and monitoring tools should be used to manage the exposure to, or frequency and/or severity of such events.

6.1.4.1. Risk mitigation

- a. Banks and Finance Companies shall proactively consider and implement a range of climate risk mitigation measures and strategies. At the counterparty-level, these may include technical measures such as embedding climate-linked covenants in loan agreements, for example requiring borrowers to acquire insurance (such as weather index insurance), green/climate credit guarantee, or invest in adaptation measures for relevant assets in vulnerable areas to ensure borrowers are adequately protected; offering preferential financing terms for borrowers actively investing in adaptation strategies, such as water-efficient technologies in the textile sector, to further incentivize proactive risk reduction; or incorporating a climate-risk related haircut into collateral assessments. Non-technical measures can also be used, such as counterparty engagement (as covered in Section 5.1: Strategy Formulation & Integration into Other Policies), or non-financial service offerings to offer technical assistance and educational services to target borrowers.
- b. At the portfolio level, Banks and Finance Companies can make use of climate-related hedging mechanisms, portfolio management based on climate risk materiality and proportionality, or implement simplified exposure caps. Banks and Finance Companies

can also leverage available resources such as credit/climate guarantees, including Bangladesh Bank's Credit Guarantee Scheme³⁵ and those available from Development Finance Institutions (DFIs)³⁶, or partner with DFIs to co-finance adaptation projects to unlock additional resources and expertise in implementing resilience measures. Risk transfer options may also be used, such as securitization of climate risk exposed loans to transfer and diversify the climate risk exposure.

- c. Use of insurance mechanisms is relevant to both counterparty-level and portfolio level risk management. One such mechanism is parametric insurance, which pays out on the occurrence of a specified event happening. Relevant examples include a certain level of rainfall intensity which could be related to excessive rainfall (used to insure against flooding) or reduced rainfall (used to insure against drought), or a specific category of cyclone (used to insure against cyclones). These mechanisms can be developed by Banks and Finance Companies in partnership with Insurance Companies, and can be combined with loan products to provide additional protection to the borrower. In addition, they can also be leveraged by Banks and Finance Companies as part of their portfolio mitigation strategies.
- d. In the aftermath of physical risk events, different responses can be employed to reduce their economic impact at both a counterparty and macroeconomic-level. These can include reducing the burden of existing loans through measures such as deferring payments on existing loans, or provision of further emergency lending to facilitate business recovery, asset re-construction and renovation.³⁷ Such measures provide support to counterparties and allow them to rebuild their financial health, in turn protecting the Bank or Finance Company's balance sheet. Where this leads to missed cash flows, Banks and Finance Companies may consider hedging this through an insurance-based mechanism such as parametric insurance, described above.
- e. Proactive support for disproportionately affect vulnerable communities, including women is a crucial aspect of climate risk management. This involves designing and implementing gender sensitive microfinance programs for climate-affected communities, or integrating climate risk insurance products into finance offerings to provide a safety net against extreme events. These initiatives not only reduce the financial impact of climate change on vulnerable communities but also foster greater resilience and adaptive capacity.

6.1.4.2. Monitoring

- a. Banks and Finance Companies shall establish robust monitoring mechanisms, including monitoring climate-specific KRIs. Examples of such indicators are covered in Section 3.4: Risk Appetite. These indicators shall be reviewed periodically to detect changes indicative of climate risk concerns.
- b. Banks and Finance Companies shall monitor the performance of client mitigation or adaptation. For example, this may include implementing client transition plan audits,

³⁵Bangladesh Bank, 'Manual of Credit Guarantee Scheme'.
<https://www.bb.org.bd/en/index.php/about/guidelist>

³⁶For example: Climate Policy Initiative, 'Landscape of Guarantees for Climate Finance in EMDEs'.
<https://www.climatepolicyinitiative.org/publication/landscape-of-guarantees-for-climate-finance-in-emdes/>

³⁷UNEP-FI, 'Managing physical climate-related risks in loan portfolios'.
<https://www.unepfi.org/themes/climate-change/managing-physical-climate-related-risks-in-loan-portfolios/>

requiring high-emission clients in sectors like cement and textiles to submit annual decarbonization roadmaps, and addressing non-compliance through appropriate measures incentivizing clients to proactively reduce their climate impact.

- c. Integrating early warning systems, such as the use of BMD alerts, into monitoring processes is crucial. This allows for proactive measures, such as automatic triggers for borrowers directly impacted by events like cyclones, preventing immediate defaults and fostering resilience.

6.1.5. Risk Reporting and Evaluation

- a. Banks and Finance Companies shall document identified climate risks, including their transmission channels and potential impacts on the overall risk profile. These reports shall be integrated into the Banks or Finance Company's existing risk reporting framework as set out in Bangladesh Bank's 'Risk Management Guidelines for banks' (2018), regulatory template of Sustainability and Climate related Financial Disclosure and in their annual report and they shall cover all material climate-related risks relevant to the Bank or Finance Company.
- b. As methodologies and data improve over time, Banks and Finance Companies shall continuously update their risk quantification practices to reflect new insights, methodologies and evolving risks, ensuring their risk management processes remain effective and relevant.
- c. Banks and Finance Companies are expected to establish benchmarks and conduct comparative analyses to understand how their risk exposures align with industry standards and peers. These insights can help refine their risk management strategies.

6.2. Credit Risk Management

- a. Banks and Finance Companies shall incorporate climate risk across the entire credit life cycle and credit risk management process. This shall be read in conjunction with Bangladesh Bank's 'Guidelines on Credit Risk Management (CRM)' (2016) document, Sustainability and Climate related Financial Disclosure and so shall cover key stages including due diligence and risk classification, risk-based pricing, credit risk mitigation including the use of collateral and guarantees, as well as portfolio level monitoring for key concentrations in relation to climate risk.
- b. Banks and Finance Companies shall build their understanding of the materiality of climate risk, as covered in Section 4.1: Governance Bodies, into their credit risk management policy. This requires a thorough understanding of how physical and transition risks drivers can affect borrower's default risk, and key transmission channels that would impact the portfolio. For example, increases in heat stress and drought conditions may lead to central efforts to ration water, disrupting industries with heavy dependency on water. An understanding of portfolio-level risks by sector and geographic region shall be reflected in the overall credit risk management policy and associated credit risk appetite, limits, and processes.
- c. Banks and Finance Companies shall integrate climate risk into their due diligence processes as part of ongoing credit risk management. Effective borrower evaluation and

due diligence requires an understanding of the specific climate risk posed due to the borrower's location and economic activity type. Where these risks are considered high, due diligence shall seek to ascertain the borrower's ability to adapt to these risks ('adaptive capacity'), and/or measures that have already been made to actively mitigate against these risks.

- d. An internal credit risk rating system shall incorporate climate risk wherever possible. Again, this involves considering both exposure to climate risk, as well as the adaptive capacity and adaptation or mitigation measures implemented by the borrower. This may lead to a 'gross' and 'net' climate risk rating, which over time may be incorporated into the internal credit risk rating system based on a consistent approach to considering the probability and impact of climate risk on the financial standing of the borrower. An example of such a framework may be based on an assessment the financial impact of flooding for farmers operating in a floodplain, both with and without adaptation measures such as elevated dykes to reduce the impact of flooding.
- e. Banks and Finance Companies shall develop a clear escalation matrix in line with their risk appetite where climate risk is considered high or above risk appetite. This may include further due diligence, incorporation of climate risk factors into loan pricing, or additional credit risk mitigation options.
- f. Loan pricing is expected to reflect climate risk. Banks and Finance Companies shall price loans to cover all costs including the expected loss component of the loan, cost of funds, and cost of allocated capital. As set out in Bangladesh Bank's 'Guidelines on Credit Risk Management (CRM) for Banks' (2016) and 'Integrated Risk Management Guidelines for Financial Institutions' (2016), the expected loss will be higher on loans with more credit risk which shall in turn be reflected in the pricing for the loan. Borrowers with high exposure to physical or transition risks may see an increase in credit losses, although these losses may be reduced through effective collateral, guarantees or other risk mitigation strategies. These considerations shall be reflected in the price of a loan. Other loan pricing factors may also be considered, such as the cost of funds driven by the Bank or Finance Company's access to green credit lines or use of green bonds, which may lead to different funding costs.
- g. Risk based loan pricing shall be consistent with the strategy and credit risk management policy (including risk appetite) regarding climate risk. For example, where the Bank or Finance Company's credit risk appetite sets out a willingness to work with high physical risk clients to reduce their physical risk vulnerability using adaptation measures, the pricing framework may consider the use of pricing incentives to help clients implement these adaptation measures. On the one hand, this could involve the interest rate to the client being reduced once the adaptation measure is in place, to reflect the increased resilience of the loan and lower credit risk. On the other hand, pricing frameworks may support the credit risk appetite by charging higher interest rates to high emitting, energy inefficient clients based on increased credit risk from transition risk exposure and the client's high operating costs as a result of its energy inefficiency.
- h. Credit risk mitigation strategies shall also consider necessary changes due to climate risk. Collateral highly exposed to physical risk, for example due to its building material and location in a floodplain, or to transition risk, for example due to its energy efficiency, may see an impact in its valuation. These impacts should be considered and reflected in the valuation of collateral and the associated haircut. As set out in Bangladesh Bank's 'Guidelines on Credit Risk Management (CRM) for Banks' (2016) and 'Integrated Risk

Management Guidelines for Financial Institutions’ (2016), Banks and Finance Companies need to reassess the value of collateral on a periodic basis, which may be impacted by climate risk as new transition risks occur through national or international policies or events, or new information arises around physical risk vulnerabilities or market pricing of physical risk on collateral.

- i. Banks and Finance Companies should pay particular attention to the use of guarantees as a form of credit risk mitigation. Use of guarantees such as the Credit Guarantee Scheme are encouraged to ensure that access to finance for the most vulnerable communities within Bangladesh is not significantly impacted. However, as stated in Bangladesh Bank’s ‘Manual of Credit Guarantee Scheme’, Bangladesh Bank are also alert to the potential moral hazard when using guarantees. The use of these guarantees does not reduce the risk management expectations of climate-related credit risk on Banks and Finance Companies, and Bangladesh Bank will actively supervise against this.
- j. Other mitigants may also be considered, such as shorter-tenor lending, lower loan-to-value limits, or use of additional hedging or insurance for higher risk borrowers.
- k. Banks and Finance Companies shall also monitor, report and manage the concentrations within and between risk types associated with climate risk. This shall include the use of concentration analysis at the level of sector, geography, or single name, for both physical and transition risk. In line with the credit risk appetite, these concentrations shall be monitored against relevant metrics and limits and may prompt further mitigation options at the portfolio level.

6.3. Market Risk Management

- a. Climate risk poses significant challenges to market risk management in financial sector of Bangladesh’s. Climate risk can impact various asset classes, affecting equities, interest rates, foreign exchange (FX), commodities, and derivatives. For example, companies in carbon-intensive industries (e.g., fossil fuels, cement, aviation) may experience sharp declines in stock value due to regulations, investor divestment, or stranded assets. Furthermore, crop failures, supply chain disruptions, and extreme weather events may increase inflation, pushing interest rates higher and leading to climate-driven inflation. Banks and Finance Companies holding bonds could face increased market risk as climate-related financial pressures, such as climate adaptation costs and disaster recovery expenditures, affect creditworthiness.
- b. Market risk management is addressed by Bangladesh Bank in the ‘Integrated Risk Management Guidelines for Financial Institutions’ (2016) and ‘Risk Management Guidelines for banks’ (2018), and Banks and Finance Companies should consider the impact of climate risk on market risk in the context of these guidelines.
- c. Banks and Finance Companies shall systematically identify and assess the transmission channels through which climate risk impacts market risk exposures. Banks and Finance Companies shall be required to map and analyze these transmission channels to ensure market risk exposures are properly identified and assessed under various climate risk scenarios.
- d. Banks and Finance Companies should quantify the materiality of their climate-related market risk exposures through assessments such as climate risk sensitivity analysis and climate stress testing. Banks and Finance Companies should assess the materiality of their

climate-related market risk exposures and develop appropriate mitigation strategies where material risks are identified.

- e. Banks and Finance Companies shall develop robust monitoring mechanisms ensuring continuous oversight of climate-related market risks that track real-time and forward-looking indicators of climate-related risk transmission in accordance with the guideline on Sustainability and Climate related Financial Disclosure (IFRS S1 & S2).
- f. Banks and Finance Companies should integrate Early Warning Indicators (EWIs) into their market risk monitoring frameworks to detect emerging climate risk before escalating into systemic disruptions. These indicators include:
 - i. Sudden price movements in climate-exposed assets (e.g., energy stocks, carbon-intensive bonds).
 - ii. Liquidity stress signals, including bid-ask spreads and trading volume deterioration in climate-sensitive markets.
 - iii. FX volatility linked to climate vulnerabilities, including movements in foreign reserves and external debt sustainability metrics.
 - iv. Shifts in investor perception, measured through capital flows into/out of green finance markets and E&S asset trends.
 - v. Changes in supply and demand and trades of certain goods and services.
- g. Banks and Finance Companies should report and act upon EWIs ensuring management of climate-driven market risk fluctuations.
- h. Banks and Finance Companies should explicitly integrate climate-related market risks into market risk appetite statements to align risk-taking activities with climate risk tolerance thresholds.

6.4. Operational and Reputational Risk Management

- a. Banks and Finance Companies shall consider how climate-related risks will impact their operational continuity and their reputational risks. Particularly attention shall be paid to the impact of physical risks on operational continuity, and transition risks on reputational risks.
- b. Banks and Finance Companies shall consider the potential impact of physical risks on their operations and ability to continue providing banking services. This involves an assessment of potential hazards at the relevant geographic location, and the sensitivity of assets to the relevant hazards. Banks and Finance Companies shall use this approach to identify whether physical hazards could materially impact their own physical assets, third parties, and infrastructure. These risks can lead to an inability to continue providing core business services. Banks and Finance Companies shall reflect these in business continuity plans and ensure a timely disaster recovery, both in terms of policies and the functioning of physical assets, including IT systems.
- c. Banks and Finance Companies shall consider the potential impact of transition risks on their reputation and liability risks. These risks may arise because of involvement in financing projects with transition risks, failure to meet the Banks and Finance Company's own emissions targets, or reduce emissions in line with national or international decarbonization pathways, or greenwashing.

6.5. Liquidity Risk Management

- a. Banks and Finance Companies shall consider how climate-related risks will impact net cash outflows or depletion of liquidity buffers incorporating these factors into liquidity risk management and liquidity buffer calibration.
- b. Banks and Finance Companies are required to have robust strategies, policies, processes and systems for the identification, measurement, management and monitoring of liquidity risk over a set of time horizons. Consequently, they are expected to assess the material impact of climate and environmental risks on net cash outflows or liquidity buffers.

7. Climate Scenario Analysis and Stress Testing

Banks and Finance Companies shall use climate stress testing and scenario analysis to manage climate risk and opportunities. The outcomes from climate risk scenario analysis and stress testing will directly inform risk management frameworks, enhance the resilience of a Banks or Finance Company's strategy and lending. Climate scenario analysis and climate stress testing is often used interchangeably. Climate scenario analysis is inclusive of climate stress testing, with climate scenario analysis referring to longer-term time horizons, and climate stress testing refers to shorter-term time-horizons³⁸.

7.1. Designing a Climate Scenario

7.1.1. Principles of climate scenarios

- a. Banks and Finance Companies shall design multiple climate scenarios to explore a range of climate risks and opportunities. These climate scenarios shall follow a core set of principles as outlined at the international best practices. The scenarios should be:³⁹
 - i) **Severe, but plausible:**
 1. The events in the scenario should be plausible and have a credible underlying narrative. Each scenario should include a description and relevant assumptions explaining the scenario.
 2. The scenarios should be sufficiently severe.
 - ii) **Distinct:**
 1. Scenarios should have distinct narratives and structures to explore different climate risk pathways and how they change over time for the same key variables, allowing for a comparison of the different outcomes.
 2. Each scenario shall consider the interaction between physical and transition risks. For example, higher transition risk scenarios should outline the impact on physical risk.

³⁸This is in common with the BCBS: BCBS, 'Climate-related financial risks – measurement methodologies'. <https://www.bis.org/bcbs/publ/d518.pdf>

³⁹These are in common with the TCFD: TCFD, 'The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities'. <https://www.tcfhub.org/scenario-analysis/>

- iii) **Consistent:**
 - a. The design of the climate scenarios shall follow a strong internal logic with the outcomes of a climate risk scenario resulting from the interactions between the inputs of the key scenario variables.
- iv) **Relevant:**
 - a. The scenarios shall be tailored towards the Bank or Finance Company's key risks and opportunities, considering the sectoral and geographic areas of operation of the portfolio. Where key portfolio vulnerabilities are identified (e.g. a concentration of credit exposures exposure in a particular location), relevant impacts on these key vulnerabilities should be covered by a scenario.
- v) **Proportionate:**
 - a. Coverage and granularity shall be proportionate to the size and complexity of the Bank or Finance Company. To best inform decision making, the scenario design should match the best available information.
 - b. Given the complexity, the expectation is that the scope and assessment approach of climate risk stress testing will evolve over time as the Bank or Finance Company becomes more adept at conducting these exercises and collects more relevant data.
- b. Physical risks scenarios take different emission trajectories and their impact on the climate to understand the extent to which physical risks can impact Bank and Finance Company's counterparties, portfolio and the economy in which it operates.
- c. Transition risk scenarios focus on disruptions from decarbonization efforts (i.e. policy shifts, technology or market changes) and their impact on the Bank or Finance Company's counterparties, portfolio and the economy in which it operates.
- d. The interconnected nature of physical and transition risks generally requires the design of individual scenarios to put more emphasis on one than another. A long-term scenario which assumes ambitious and orderly climate policies increases a greater amount of transition risk and a lower level of physical risk compared to long-term scenarios that assume no transition risk takes place, which will see higher levels of physical risk.
- e. Banks and Finance Companies should be aware that the results from climate scenario analysis and stress testing are influenced by the assumptions made in the scenarios, and therefore should be subject to challenge and regular review by a range of internal and/or external experts and independent functions.

7.1.2. Objective, Scope and Coverage

- a. Banks and Finance Companies conducting climate scenario analysis or climate stress testing shall clearly define its objective. An objective to explore business model impacts of structural economic changes related to transition risks may consider a longer time-horizon such as a 30-year period (e.g. a structural economic shift towards a net-zero economy and its impact on macroeconomic variables).
- b. The objective of climate scenario analysis or climate stress testing shall guide the climate scenario construction, including defining its scope and coverage. In particular, this shall cover:
 - i. The time-horizon of the scenario.
 - ii. Scope of the scenario.

- iii. Narrative of the scenario.
- iv. Coverage of the scenario.
- c. Banks and Finance Companies shall consider both short-term climate stress testing and longer-term climate scenario analysis, using the most appropriate method available to fulfill the objective aligning with best practices⁴⁰. This consideration is particularly pertinent for climate change due to the uncertainty of physical and transition risks.
 - i. **Short -term** climate stress testing captures the near-term (e.g. a 3–5-year time horizon) dynamics of acute physical risks, market reactions and policy shocks that can have immediate impacts on asset values and financial stability. Short-term scenarios facilitate tactical adjustments in operations as well as essential risk management processes such as capital planning. When designing short-term scenarios, Banks and Finance Companies may consider the NGFS short-term climate scenarios published in May 2025.⁴¹
 - ii. **Medium and Long-term** climate scenario analysis reflects the cumulative, structural adjustments taking place due to climate change and the impact of gradual shifts or delayed transition actions may change the risks posed to Banks and Finance Companies. These scenarios often analyze a time horizon of up to 30-years to drive strategic decision making and evaluation of business models. When designing long-term scenarios, Banks and Finance Companies may consider the NGFS long-term climate scenarios published in 2024.⁴²
- d. Banks and Finance Companies are encouraged to use climate risk stress testing⁴³ and climate scenario analysis to assess the material risks that climate change poses to their portfolios. This should include a scenario conducted with the assumption that the Banks and Finance Companies have taken no management actions, and the counterparties do not take further adaptation or resilience measures across the scenario mechanisms. This allows for a baseline vulnerability assessment of inaction. Other scenarios may be used if the Bank or Finance Company chooses to explore the impact of management or counterparty actions, which requires greater sophistication in terms of modelling.
- e. Banks and Finance Companies in Bangladesh should include the following events in their scenarios:
 - i. Physical risk impacts on the most material sectors to the Bank or Finance Company that are vulnerable to physical risks.
 - ii. Transition risk impacts on the Power Sector, drawing from existing policy (both Bangladesh specific and international), and further developments that may impact the Power sector. Examples of such policies are covered in Section 3.1 ‘ Drivers and Transmission Channels’.

⁴⁰CFRF, ‘Scenario Analysis Guide for Banks’. <https://www.fca.org.uk/publication/corporate/cfrf-guide-2022-scenario-analysis-banking-guide.pdf>

⁴¹NGFS, ‘Short Term Climate Scenarios for central banks and supervisors’. <https://www.ngfs.net/en/publications-and-statistics/publications/ngfs-short-term-climate-scenarios-central-banks-and-supervisors>

⁴²NGFS Long-term Climate Scenarios & Data Tutorial https://globalcreditdata.org/wp-content/uploads/2024/04/2024-04-17_NGFS-Scenarios-Data-Tutorial.pdf

⁴³Guideline on Stress Testing 2024 <https://www.bb.org.bd/mediaroom/circulars/fsd/dec302024fsd01e.pdf>

- iii. Transition risk impacts on the RMG and Textiles Sector, drawing from existing policy (both Bangladesh specific and international), and further developments that may impact the Power Sector. Examples of such policies are covered in Section 3.1 ‘ Drivers and Transmission Channels’

7.1.3. Leveraging Existing Scenarios

Banks and Finance Companies should consider leveraging existing global climate scenarios and determining their country specific appropriateness based on the objective of the climate scenario analysis or stress testing exercise. These scenarios have established narratives, assumptions, climate pathways and expected macro trends (i.e. economic impacts, technological change, and energy consumption). In combination with these scenario outputs, Banks and Finance Companies can layer in portfolio-specific data to model adverse impacts from climate change. However, international recommendations are evolving, and some methodologies might be subject to challenge or review.

7.1.4. Assessment Approaches

- a. Banks and Finance Companies may use bottom-up approaches, based on individual counterparty assessments, as well as top-down assessments using sector-location combination specifications, or a combination of the two.
 - i) **Top-down** approaches consider macroeconomic trends in certain sector-location combinations to understand climate risk impacts channels. This approach assumes the same level of vulnerability and responses across all counterparties in a sector. This is a simpler approach and allows for comparability and analysis of systemic risks to the financial sector.
 - ii) **Bottom-up** approaches assess the climate scenario impact on individual exposures. This involves the use of tools such as damage curves and carbon tax impact modelling on cash flows and balance sheets, incorporating counterparty specific information. This provides a greater depth of analysis and therefore better understanding of underlying risks. However, they require a resource-intensive data collection process and methodological construction.
- b. Best practice recommends Banks and Finance Companies to combine both bottom-up approaches as well as top-down assessments.⁴⁴ As climate stress testing capabilities improve, Banks and Finance Companies may seek to develop combined approaches.
- c. Banks and Finance Companies shall consider the granularity of scenario variables to be used in their assessment approach, which should match the quality of data which Banks and Finance Companies will be able to collect internally. Banks and Finance Companies should collect a range of data on their counterparties. Data collected will vary depending on the use of top-down vs bottom-up approaches, but may include:
 - i. Balance sheet and cash flow information.
 - ii. Geographic location of their counterparties or counterparties key assets – coordinate level where possible, region within a country otherwise.
 - iii. Asset dependence, such as the importance of the asset to the counterparty’s revenue generation.

⁴⁴An example of this approach is found in the Bank of England’s CBES: Bank of England, ‘Results of the 2021 Climate Biennial Exploratory Scenario (CBES)’. <https://www.bankofengland.co.uk/stress-testing/2022/results-of-the-2021-climate-biennial-exploratory-scenario>

- iv. The sector in which their counterparty operates in to judge their sensitivity to climate hazards.
 - v. Counterparty greenhouse emissions to assess financed emissions and counterparty vulnerability to transition risks.
 - vi. Transition and adaptation plan of counterparties.
 - vii. Key technologies leveraged by counterparties.
 - viii. Expected physical damage to exposures arising from climate hazard-impacts.
- d. It is expected that climate scenario analysis and climate stress testing will use the best available data (i.e. emission intensity proxies) with the collection expected to improve as future iterations of this analysis is conducted. The more extensive the data collection and granularity, the more sophisticated a scenario analysis exercise can be.
- e. Based on the available data, Banks and Finance Companies shall define the key variables used in their assessment approach. Key variables include those covering the major trends and events occurring within a scenario, such as the imposition of carbon taxes or the occurrence of specific hazards, or broader changes such as changes in oil prices or the impact on Gross Domestic Product (GDP) from physical or transition risk events.
- f. The assessment approach shall be informed by the outputs needed to fulfil the agreed objectives of climate scenario analysis and climate stress testing. For example, the use of climate stress testing for risk management and capital may seek to measure the impact of lower revenues and profitability for corporates, leading to changes in credit risk PDs. On the other hand, the use of climate scenario analysis for strategy setting may assess the indirect impact of climate risk to the Bank or Finance Company from wider macroeconomic trends on the existing business model. A more targeted variable within a climate stress testing exercise could for example have outputs that model the relationship between the sensitivity of a Bank or Finance Company's counterparties to a carbon price, leading to expected credit losses.

7.1.5. Reporting

- a. Banks and Finance Companies shall report internally on the outputs of their climate scenario analysis and disclose key findings as part of their disclosures in their annual reports and in the regulatory reporting template attached to the guideline on Sustainability and Climate related financial Disclosure for Banks and Finance Companies.
- b. In addition to these outputs, Banks and Finance Companies shall disclose the assumptions and limitations of their climate scenario analysis.
- c. Given the uncertainty of climate change and the evolving nature of climate scenario analysis methodologies, Banks and Finance Companies shall recognize and account for the limitations of the selected scenarios when integrating the results into decision-making processes.

7.2. Embedding Climate Scenario Analysis and Climate Stress Testing in Decision Making

- a. Banks and Finance Companies shall use climate scenario analysis and climate stress testing as part of their business strategy, financial planning and risk management. Embedding these insights allows Banks and Finance Companies to manage climate risk

effectively while identifying transition opportunities (e.g., green investments) and adaptation measures (e.g., resilient infrastructure financing) for their portfolios.

- i. Use cases can also extend beyond traditional risk management, informing strategic decisions such as capital allocation and product offerings. Risk Appetite Adjustments: revising lending criteria or conditions based on vulnerabilities identified.
- ii. Counterparty engagement: identifying counterparties in key sectors which require further due diligence.
- iii. Management Action Plans: targeted actions to be taken by decision makers informed by the outputs of the climate scenario analysis and climate stress testing.

8. Disclosures

8.1. Disclosures

- a. Banks and Finance Companies shall disclose Sustainability and climate-related financial risks and opportunities following ‘Guideline on Sustainability and Climate-Related Financial Disclosure’⁴⁵(2023). In particular:
 - i. Banks and Finance Companies shall report their climate-related risks and opportunities semi-annually in line with this guideline and using the prescribed regulatory template.
 - ii. Banks and Finance Companies shall follow the IFRS-S2 Climate-related Disclosure standards in order to issue clear, comprehensive and quality information on the exposure and management of climate risk.
 - iii. The IFRS-S2 Standard requires Banks and Finance Companies to disclose information based on climate related risk and opportunities, transition plans and scenario analysis in order for users of the disclosures to assess the impact of climate related risk and opportunities on the Bank or Finance Company’s position, performance, strategy, and business model.
 - iv. The Bank or Finance Company shall follow the four content pillars of the IFRS-S2, these include: (i) Governance; (ii) Strategy; (iii) Risk Management; and (iv) Metrics and Targets.
 - v. The phased in implementation of the disclosure reporting requirements will increase Banks and Finance Companies’ expertise over the period.

8.2. Transition and Adaptation Plans

Banks and Finance Companies are required to disclose information on their strategy outlined in ‘Guideline on Sustainability and Climate-Related Financial Disclosure’ (2023) which shall include a climate-related transition plan. Banks and Finance Companies are encouraged to cover both mitigation and adaptation in these plans and disclosures.

⁴⁵ Guideline on Sustainability and Climate-Related Financial Disclosure
<https://www.bb.org.bd/mediaroom/circulars/gbcrd/dec262023sfd06e.pdf>

9. Conclusion

The Guideline on Climate Risk Management for Banks and Finance Companies represents a significant milestone in integrating climate considerations into Bangladesh's financial sector. It establishes a robust framework for systematically identifying, assessing, and managing climate-related risks, while aligning domestic supervisory expectations with leading international standards such as the BCBS Principles, NGFS Recommendations, and ISSB Disclosure Requirements. Through this initiative, Bangladesh Bank underscores its strong commitment to building a climate resilient, transparent, and sustainable financial system.

Effective implementation of this Guideline will enhance the ability of Banks and Finance Companies to mitigate climate-related financial risks and seize new opportunities in climate finance. By promoting sound climate risk governance and transparent disclosure, the Guideline will not only strengthen financial stability but also bolster foreign investors' confidence in the financial sector of Bangladesh. This confidence will further facilitate capital inflows, support innovation in climate finance, and reinforce the financial sector's role in driving inclusive economic growth. The successful adoption of this Guideline will eventually empower financial institutions to protect stakeholders and catalyze transformative investments supporting Bangladesh's transition toward a low-carbon and climate-resilient economy.

Annexes

Annex 1: Physical Risk Assessment

Physical risk measurement approaches vary in terms of detail, resource and sophistication. For example, a qualitative approach using heatmaps or a quantitative approach can be used to assess the physical risk.

1.1 Heatmap approach:

- a. Heatmap approach is a simple sensitivity map, where each sector is categorized according to its sensitivity to physical risk aligned with sectoral exposure in the portfolio. For example, this may categorise all Agricultural exposures as ‘high’ physical risk, while service-based sectors such as ‘Media’ may be categorised as ‘low’ physical risk. Detailed in the Good practices for climate-related and environmental risk management issued by the ECB.⁴⁶

1.2 Hazard database approach:

- a. Another approach can focus on the hazard(s) in the region, such as the risk of heat stress, or a composite indicator looking at the overall physical risk in the region. Instead of assigning a sector to a physical risk score based on its sensitivity, it assigns all exposures in a specific location to a physical risk score based on the hazard profile of the location.
- b. The benefit of this approach is the availability of public data sources, such as ThinkHazard⁴⁷. Using this source would lead to assigning all assets in Bangladesh a ‘High’ risk under the ‘Extreme Heat’ hazard. For ‘River Flood’, assets would be assigned either ‘Medium’ risk (if based in Barisal), or ‘High’ risk for all other districts.
- c. Banks and Finance Companies should ensure that they are measuring the risk of all relevant hazards within a country for every asset. An overall physical risk score can also be assigned as the highest level of physical risk to any relevant hazard, for example, the asset would receive the ‘High’ risk score overall.
- d. For example, Bangladesh’s Climate Vulnerability Index⁴⁸ provides a risk score for geographic areas at the Union and Upazila level. Taking the example of heat stress, the heat stress indicator is made up of a normalized indicator (between 0-1) that considers both the increase in the number of heat waves and duration of heat waves, as well as the increase in the heat level. Taking the score of the Magura Sadar Upazila, heat stress is assigned a score of 0.49. For the livestock sector, other composite indicators are also available, including “Decrease in Livestock & Poultry

⁴⁶ECB, ‘Good practices for climate-related and environmental risk management’. <https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.thematicreviewcercompendiumgoodpractices112022~b474fb8ed0.en.pdf>

⁴⁷ThinkHazard! <https://thinkhazard.org/>

⁴⁸Ministry of Environment, Forest and Climate Change, ‘Nationwide Climate Vulnerability Assessment in Bangladesh June 2023’. <https://climatefinance.erd.gov.bd/publications/16>

Health Vulnerability”, which is assigned a score of 0.67 for the same Upazila. The user can then convert this into a rating (e.g. High, Medium, Low, or 0-5) based on their own thresholds.

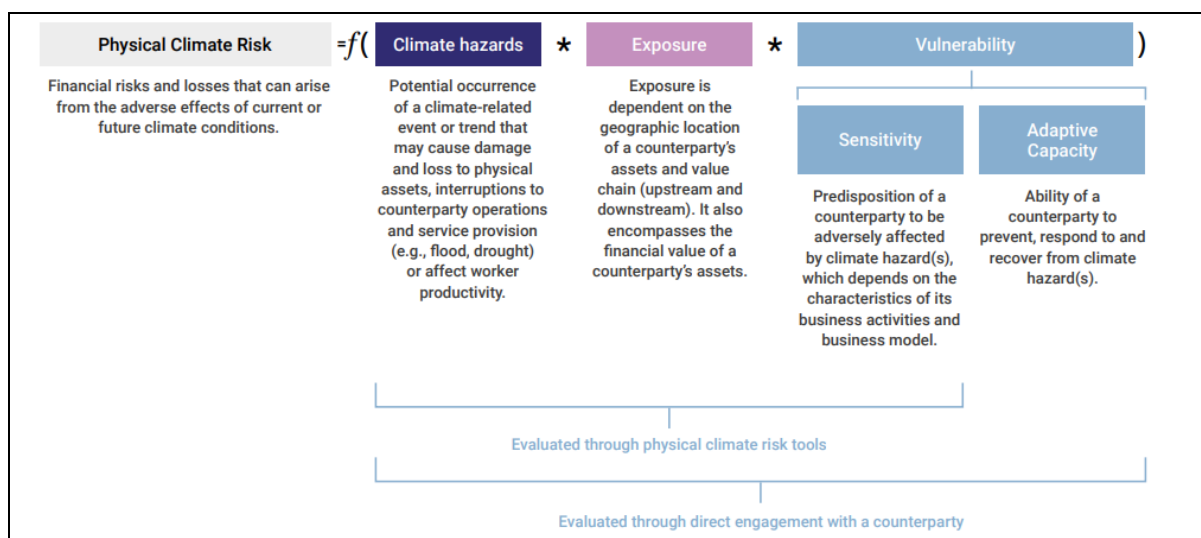
- e. The following points should be considered in selecting hazard risk score data:
 - i. Hazard risk scores change over time. It is therefore important to source data that looks not only at current physical risk, but also future physical risk.
 - ii. Hazard risk scores will increase in accuracy with further granularity of location. For example, assigning a river flood risk score to a city or town assumes the entire city or town has the same level of river flood – however, river flooding is highly localised and will only be high in areas closer to the river with specific terrain and with limited flood protection. Users should therefore seek data with higher levels of granularity for appropriate hazards.
 - iii. Physical risk rating indicators such as probabilities of a particular event are converted into a standardized risk rating that allows for comparability. Banks and Finance Companies should define the threshold used to determine each rating (e.g. from the ThinkHazard methodology⁴⁹, a high ‘River Flood’ risk is a 1 in 10 year or lower return period probability of a 0.5m flood happening, i.e. 10% or higher annual probability). Banks and Finance Companies should use thresholds that conform with their view of ‘high’ risk (e.g. if they consider a high flood risk should be a 20% annual probability for a 0.5m flood, they may seek a different indicator).

1.3 Quantitative approach

- a. Physical risk can be assessed by both the hazard at a geographic location (e.g., frequency and intensity of extreme weather events), and the vulnerability of the sector or counterparty to the relevant hazards. Following the IPCC’s approach to assessing physical risk outlined below, this ‘vulnerability’ component is comprised of ‘sensitivity’ at a minimum, and can also include the adaptive capacity of the sector or counterparty.

⁴⁹ThinkHazard!, ‘Methodology Report’. https://thinkhazard.org/static/documents/thinkhazard-methodology-report_v2_0.pdf

Figure 1: IPCC Physical Climate Risk Approach



Source: ARIC Physical Climate Risk Assessment and Management: An Investor Playbook (2024). The formula is derived from the IPCC Fifth Assessment Report

- b. The same hazard risk sources outlined in the heatmap approach can be used to assess the first element. For the vulnerability element, the first consideration is sensitivity of the relevant activity (livestock production) to the hazard (heat stress). This should consider the value chain of that economic activity to understand how the hazard can impact the economic activity. Some considerations include:
 - i. **Direct impacts on livestock:** Prolonged or excessive heat can cause livestock stress and dehydration, and increasing the prevalence of disease, decreasing livestock productivity.
 - ii. **Impacts on worker productivity:** Workers cannot safely work outside without the risk of dehydration, exhaustion, or illness.
 - iii. **Impacts on facilities:** Facilities such as cooling and refrigeration could be stressed leading to power cuts, damaging stock.
 - iv. **Supplies:** Crops may suffer from heat stress, reducing the availability or cost of livestock feed.
 - v. **Transportation:** Goods may be more susceptible to spoiling during transportation.
- c. Banks and Finance Companies should determine the Livestock Sector as 'high' (3) sensitivity to heat stress. The other step would be to consider adaptive capacity. This may include:
 - i. **Technical adaptation measures / livestock farming practices:** such as altering grazing times to cooler parts of the day, rotating pastures to avoid heat-stressed areas, feed adjustments.
 - ii. **Physical adaptation measures:** such as the installation of shelter and shade, use of cooling systems, water storage, use of heat stress resilient breeds.
 - iii. **Available mitigation:** such as insurance, cash buffers or capital.

- d. By engaging with the counterparty on their adaptive capacity, the user may determine that the Livestock asset's adaptive capacity reduces its sensitivity from 'high' (3) to 'medium' (2).

From this, the risk can be rated as follows:

$$\begin{aligned}\text{Heat stress risk} &= \text{hazard risk} * \text{vulnerability} \\ &= \text{hazard risk} * (\text{sensitivity} - \text{adaptation}) \\ &= 3 * 2\end{aligned}$$

This can then be quantified in a risk matrix:

		Hazard risk		
Vulnerability		1	2	3
	1			
	2			
	3			

Data providers exist to produce both the hazard scores and sometimes the sensitivity score. See the UNEP-FI database⁵⁰ for example.

- e. The potential losses as a result of physical risk should be quantified in the next steps. This considers:
- i. Revenue impacts: Reductions in revenue as a result of heat stress.
 - ii. Operational costs: Higher use of cooling systems or increased repairs of equipment due to heat stress.
 - iii. Capital expenditure: New investments in new breeds of livestock more resilient to heat stress.
 - iv. Borrowing costs: as a result of new investments needed.

These can lead to impacts on the balance sheet or income statement which in turn can be translated to standard risk metrics such as credit risk metrics.

⁵⁰ UNEP FI, 'UNEP FI Dashboard: Environmental Risk Tools Overview'. [https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.unepfi.org%2Fwordpress%2Fwp-content%2Fuploads%2F2024%2F09%2FQ3-Database Master.xlsx](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.unepfi.org%2Fwordpress%2Fwp-content%2Fuploads%2F2024%2F09%2FQ3-Database%20Master.xlsx)

Annex 2: Transition Risk Assessment

Banks and Finance Companies may use quantitative methodology as well as some qualitative considerations to assess transition risk. However, there is no common approach to assessing transition risk. For example, they can assess their transition risk posed to an asset in the RMG and Fabric Sector in Bangladesh.

2.1 Carbon pricing

- a. Transition risk refers to the direct and indirect impacts of the transition to a lower-carbon economy. It is therefore primarily concerned with the current and future profile of the economy's or counterparty's emissions and emissions intensity. One consequence of this is the growing consensus towards the importance of a policy instrument known as 'carbon pricing' to transition to a decarbonized economy. According to the World Bank, carbon pricing is an instrument that captures the external costs of GHG emissions and ties them to their sources through a price, usually in the form of a price on the carbon dioxide (CO₂) emitted. This helps shift the financial burden for the damage from GHG emissions back to those who are responsible for it, allowing emitters to decide to either transform their activities and lower their emissions, or continue emitting and paying for their emissions.
- b. For an RMG and Apparel asset, this assessment involves 1) estimating the emissions and or the emissions intensity of the company, 2) projecting the 'carbon price' under a given scenario, and 3) calculating the impact of the carbon price on the counterparty.
 - i. *For the Apparel Sector, one estimate suggests that producing 1 kg of fabric releases an average of 20–23 kg CO₂e⁵¹.*
 1. Assembly of garments is estimated to be responsible for only around 7% of emissions of garment production⁵², while the raw materials and processing of fabrics is responsible for about 91%. Using the upper estimate of the FabricSectors impact, this leads to around 1.77kg kg CO₂e per kg of RMG products.
For this, we will assume that the company in question produces 500 tonnes of fabric per year – equivalent to up to 11.5k tonnes of CO₂e– and also produces 500 tonnes of RMG products per year – equivalent to 885 tonnes of CO₂e per year. Assuming this company produces and sells their own fabric, as well as creating RMG products, this leads to total emissions of 12.385k tonnes of CO₂e per year.
 - ii. *Using the NGFS disorderly scenario, carbon prices are estimated under this scenario to reach \$54.19 per tonne of CO₂.*
 - iii. *Therefore, the counterparty will pay an equivalent of roughly \$671.1k per year production in the disorderly scenario.*

⁵¹Ashok Ramchandra Athalye, 'Carbon footprint in textile processing. https://www.researchgate.net/publication/293001306_Carbon_footprint_in_textile_processing

⁵²Quantis, 'Measuring Fashion: Insights from the Environmental Impact of the Global Apparel and Footwear Industries'. https://catalogue.unccd.int/1359_measuringfashion_globalimpactstudy_full-report_quantis_cwf_2018a.pdf

- c. Banks and Finance Companies can use this carbon price to estimate the impact on profitability. In turn, this may be turned into a risk rating, such as from 0-5, using their own thresholds (e.g. if the carbon price imposes a cost of over 20% of revenue per year, this may be determined to be the highest score of 5).

2.2 Other quantitative assessments

A brief overview of two other commonly used frameworks are highlighted below:

- a. Stranded asset / shadow carbon pricing assessment:

UNEP-FI describe stranded asset as the “process of collapsing expectations of future profits from invested capital (the asset) as a result of disruptive policy and/or technological change”.⁵³ A commonly cited example is related to fossil fuel assets under certain transition risk scenarios, the value of fossil fuel reserves may become ‘stranded’ due to policies such as carbon prices rendering the fossil fuel to be uneconomical. This can be assessed using a shadow carbon price assessment, which involves the following steps:

- i. For a given project, estimate income and costs under a business-as-usual scenario to calculate the Net Present Value (NPV).
- ii. Re-estimate the income, costs and NPV under a transition-risk scenario, specifically one that involves the implementation and / or increase in carbon prices. For example, this could consider the direct tax implications of a carbon price on the project, or could consider the pass-through of a carbon price on key input materials from the project’s suppliers.
- iii. Test the price at which carbon pricing leads to a do not invest decision. The Bank or Finance Company will then need to consider the likelihood of such a carbon price.

Stranded assets do not only come about as a result of carbon pricing, however, for example, stranded power production capacity may come about when the variable costs associated with a project’s power production exceeds the market price of electricity, which becomes a risk as other energy sources achieve significant efficiency improvements and capacity within the energy system. Stranded asset assessments consider different energy price trajectories in place of a carbon price.

- b. Portfolio Alignment

Another type of assessment is the Portfolio Alignment tool, which helps to measure and monitor how aligned individual counterparties or entire portfolios are with a certain ‘temperature’ pathway, such as a Paris Agreement aligned 1.5°C temperature. Different categories of alignment metrics are described in detail by GFANZ⁵⁴, including:

- i. Binary target measurement: a dummy indicator metric indicating whether a counterparty has a portfolio with a science-based, validated target.

⁵³UNEP FI, ‘Assessing Climate Transition Risk: Methodologies and Roles for Financial Institutions’. <https://www.unepfi.org/wordpress/wp-content/uploads/2021/02/UNEP-FI-The-Climate-Risk-Landscape.pdf>

⁵⁴GFANZ, ‘Measuring Portfolio Alignment’. <https://assets.bbhub.io/company/sites/63/2022/07/GFANZ-Portfolio-Alignment-Measurement-August2022.pdf>

- ii. Maturity scale alignment: a categorical indicator metric assessing a counterparty's performance or readiness to align with a 1.5°C temperature pathway.
- iii. Benchmark-divergence: a metric showing the alignment of a counterparty with a normative benchmark, which is typically a benchmark scenario emissions pathway for a typical company within a sector to reach 1.5°C. This is expressed as a percentage to measure the overshoot or undershoot of a company compared to the benchmark.
- iv. Implied temperature rise: these build on benchmark-divergence models and translate the degree of overshoot or undershoot into a 'global warming impact' in °C. The temperature represents the expected increase in temperature compared to pre-industrial levels by 2100 if the whole global economy were to over/undershoot their own benchmarks by the same proportion as the relevant investment.
This involves a form of scenario analysis. A commonly used tool is the Paris Agreement Capital Transition Assessment (PACTA), described in more detail below.

2.3 PACTA

- a. PACTA is a forward-looking climate scenario analysis tool which can assess the alignment of Banks or Finance Company's corporate lending portfolios with various climate transition pathways, particularly those consistent with the Paris Agreement. The methodology focuses on identifying whether a portfolio's underlying assets (via corporate capital expenditure and production plans) are on track with decarbonisation trajectories over the next five years. Critically, it evaluates whether the planned production of companies aligns with sectoral targets in scenarios, such as the IEA's Net Zero by 2050, rather than relying only on current emissions or static financial exposures.
- b. PACTA can therefore be a useful tool for assessing, monitoring and benchmarking transition risk. By highlighting areas of misalignment that could translate into elevated credit, reputational, or litigation risks, PACTA can help to drive climate-related strategic planning at the counterparty and sectoral level.
- c. To run analysis using PACTA requires linking detailed, forward-looking physical asset data to financial exposures through corporate identifiers. It requires granular data collection including:
 - i. Data on the credit portfolio such as counterparty names, exposures, sector and technology allocation, and legal entity identifiers.
 - ii. Forward-looking corporate-level 5-year production plans across key climate-relevant sectors such as power, automotive, oil and gas, steel, cement, and aviation. Data on production plans is broken down into different types of technologies such as 'build-out' technologies that need to be further built out in a transition to a lower carbon economy.
- d. PACTA analyses technology-level alignment of the counterparty by comparing projected production plans for the counterparty against decarbonization pathways for the relevant technology to meet a Paris Agreement aligned temperature outcome. For example, a counterparty's energy production may be made up of a mixture of 'build-out' technologies (primarily renewable energy) and 'phase-out' technologies (such as coal or oil). PACTA will then compare the projected pathway of the energy generation mix to a hypothetical energy generation pathway that aligns with a Paris Agreement aligned temperature outcome – the counterparty is misaligned if its

projected share of ‘phase-out’ technologies is higher than the share of the decarbonization pathway.

- e. An example of this approach can be seen in the ECB’s 2024 report ‘Risks from misalignment of banks’ financing with the EU climate objectives’⁵⁵. This analysis was used to highlight significant transition risks within EU banks’ credit portfolios, driven primarily by slow corporate transitions in high-emission sectors.
- f. Alternatively, Banks and Finance Companies can also refer to Sector Decarbonization Pathways published by the government, industry associations, and/or international think-tanks such as Climate Bond Initiative, Transition Pathway Initiative, etc. The Implied Temperature Rise methodology, developed by the CDP (formerly known as the Carbon Disclosure Project) and the World Wide Fund for Nature (WWF), can also be used.

2.4 Qualitative assessment (scorecard approach)

A qualitative assessment is also possible for assessing the RMG and Fabric Sector’s transition risk. This involves consideration of all the possible mechanisms by which the RMG Sector may be impacted in a transition. For example:

- a. International policies related to transition risks imposing additional costs on the RMG Sector. This could include:
 - i. Expansion of the Carbon Border Adjustment Mechanism to cover RMG products, which would impose a carbon border tax on imports from outside of the EU.
 - ii. Assessing the impact of the EU Strategy for Sustainable and Circular Textiles, requiring new capital expenditures and compliance costs related to stricter sustainability criteria (e.g. durability, recyclability).
 - iii. Consideration of the compliance costs imposed by policies such as the Digital Product Passport⁵⁶ which could require additional costs related to calculating and disclosing data such as on sourcing of raw materials, manufacturing processes, energy consumption, water usage, and carbon emissions associated with each garment.
- b. Nationally imposed laws such as a carbon price.
- c. Market level changes such as increases in energy prices, or consumer behaviours such as a move towards garments with higher durability or made in local markets.
- d. Interactions between these issues– a Digital Product Passport would provide greater transparency on the emissions of garments, which may lead to revenue impacts as a result of consumer behaviour shifts away from high emitting garments towards locally made garments.

Banks and Finance Companies should weigh up the likelihood and impact of these different transition risks, and score the RMG and Apparel asset accordingly.

⁵⁵ECB, ‘Risks from misalignment of banks’ financing with the EU climate objectives’. <https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.bankingsectoralignmentreport202401~49c6513e71.en.pdf>

⁵⁶EU, ‘EU’s Digital Product Passport: Advancing transparency and sustainability’. <https://data.europa.eu/en/news-events/news/eus-digital-product-passport-advancing-transparency-and-sustainability>

Annex 3: Financed Emissions

- a. Financed emissions are the GHG emissions associated with a Bank or Finance Company's lending and investment activities. They fall under Scope 3, Category 15 of the GHG Protocol and typically represent the largest share of a Bank or Finance Company's overall emissions. Measuring these emissions is essential for assessing climate-related financial risks and aligning portfolios with national and international climate goals, such as Bangladesh's NDCs.
- b. Banks and Finance Companies are encouraged to calculate financed emissions using internationally recognised standards, particularly the Partnership for Carbon Accounting Financials (PCAF) methodology and the GHG Protocol Financial Sector Guidance. These methodologies enable Banks and Finance Companies to estimate the emissions linked to their financial exposure to counterparties.
- c. A key element of the calculation is the attribution factor, which determines the proportion of a company's emissions that can be attributed to the Bank or Finance Company's involvement. The standard formula for attribution is:

Figure 2: PCAF Financed Emissions Approach

$$\text{Financed emissions} = \sum_i \text{Attribution factor}_i \times \text{Emissions}_i \quad (\text{with } i = \text{borrower or investee})$$

$$\text{Attribution factor}_i = \frac{\text{Outstanding amount}_i}{\text{Total equity} + \text{debt}_i}$$

Source: PCAF

- d. This ratio is then multiplied by the counterparty's absolute emissions (Scope 1 and 2, and Scope 3 where available) to determine the financed emissions attributable to the Bank or Finance Company. If actual emissions data are unavailable, sectoral or regional emission factors may be used, with appropriate data quality scores assigned, as per PCAF guidelines.
- e. Financed emissions are an important diagnostic for transition risk. Banks and Finance Companies should analyse how their portfolios, particularly in carbon-intensive sectors, are exposed to policy changes (e.g. carbon pricing, EU CBAM), market shifts, and technological disruption. This information can be used to stress test portfolios, assess credit quality, and inform capital planning.

- f. Monitoring financed emissions allows Banks and Finance Companies to:
 - i. Align their lending strategies with national climate targets and sectoral transition pathways;
 - ii. Set and track portfolio-level decarbonisation targets;
 - iii. Identify clients or sectors with high emissions and low transition readiness; and
 - iv. Prioritise green finance opportunities and support clients in developing transition plans.

- g. Banks and Finance Companies are expected to disclose financed emissions in line with emerging international and national requirements, including IFRS S2 and Bangladesh Bank climate disclosure frameworks. Disclosures should outline the methodology used, coverage (% of portfolio), data sources, assumptions, attribution approach, and progress against any emissions reduction targets.

Annex 4: Data Collection Needs

- a. Data availability is one of the most important challenges to overcome when developing climate risk management standards. As part of plans to develop climate risk management capabilities, Banks and Finance Companies will need to consider what data they require, how they can obtain it, and when they need it. This will include general data requirements, such as data describing physical and transition risk drivers such as the probability of river flood risk at a given location, and counterparty or portfolio level information to assess their sensitivity to physical and transition risks. Collection of the different data is likely to include a mixture of use of public materials, use of data or service providers, and use of counterparty engagement to collect data.
- b. Data requirements may be broken down into more immediate needs to begin the climate risk management implementation plan, and further data requirements as the Bank or Finance Company advances the different elements of its climate risk management capabilities. However, these timelines may change depending on the prioritisation of their climate risk management implementation plan. For example, Banks and Finance Companies that have assessed higher exposure to physical risk in their portfolio may look to advance their physical risk management capabilities first, which may lead to prioritizing physical risk data.

A high-level example of data collection needs is given below:

Table 3: Data collection needs

<i>Physical risk</i>		<i>Transition risk</i>	
<i>Foundation level data needs</i>	<i>Advanced level data needs</i>	<i>Foundation level data needs</i>	<i>Advanced level data needs</i>
<i>Counterparty / portfolio-level:</i> i. Location of assets (coordinate level where possible) ii. Sensitivity of assets and sectors to physical risk	<i>Counterparty / portfolio-level:</i> i. Dependence on key assets / sites in different locations (e.g. for revenue generation or cost savings) ii. Supply chain information and key locations iii. Adaptation measures in place iv. Adaptation Plan in place v. Financing needs	<i>Counterparty / portfolio-level:</i> i. Scope 1 and 2 emissions of counterparty ii. Key revenue sources – including developed economy exports (e.g. subject to CBAM) iii. Energy sources iv. Adaptive capacity	<i>Counterparty / portfolio-level:</i> i. Scope 3 emissions of counterparty ii. High-emitting supply chain inputs iii. Mitigation measures in place iv. Adaptation Plan v. Financing needs

<i>Physical risk</i>			<i>Transition risk</i>		
<i>Foundation data needs</i>	<i>level</i>	<i>Advanced level data needs</i>	<i>Foundation data needs</i>	<i>level</i>	<i>Advanced level data needs</i>
<i>General:</i> i. <i>Chronic and acute hazard probabilities and trajectories at key locations, e.g. river flooding probability from current to long-term at most relevant locations.</i>			<i>General:</i> i. <i>Country-specific decarbonisation policies</i> ii. <i>Sector-level decarbonisation pathways</i> iii. <i>Energy price projections</i>		
<i>General:</i> i. <i>Granular chronic and acute hazard probabilities, e.g. river flooding probability from current to long-term at 1km level resolution.</i>			<i>General:</i> i. <i>Country-specific decarbonisation policy trajectory</i> ii. <i>Projections of key resources impacted by transition risk such as critical minerals</i>		

- c. Some of the more general data collection needs may also require monitoring of EWIs to enable an understanding on whether physical risks or transition risks are likely to impact the Bank or Finance Company in the near future. Examples may include:
- i. Monitoring of national or sub-national policies, such as policies associated with achieving the NDC, which may come through sector specific regulations such as deforestation laws, water quality standards, or requirements or incentives to reduce carbon or methane emissions.
 - ii. Monitoring of national or sub-national transition plan roll-out, such as successful or delayed building of infrastructure necessary to facilitate transition technologies such as renewable energy or electric vehicles.
 - iii. International climate agreements or trade policies (such as the CBAM).
 - iv. Materials and resources price changes, such as changes in energy prices, critical minerals, or other key resources.
 - v. Market-level valuation and cost of capital changes, such as changes in cost of capital for carbon intensive companies.
 - vi. Technological developments such as increased efficiency of competitive technologies or breakthroughs in key decarbonization technologies.
 - vii. Real-time monitoring of acute events.
 - viii. Long-term monitoring of chronic events.
 - ix. Changes in biodiversity and ecosystem health, e.g. water availability.
 - x. Client-level progress in implementation of Transition and Adaptation plans.

These EWIs should be linked to a specific risk – for example, the implementation of carbon pricing as an incentive to reduce carbon emissions should be linked to monitoring of companies with high emissions intensity, who are therefore most likely to be impacted by this change.

Annex 5: Climate Scenarios

- a. Scenarios published by international governance bodies include the International Energy Agency (IEA), Network for Greening the Financial System (NGFS), and the IPCC. Tables 4-6 detail the core characteristics, pathways and outputs of these scenarios.
- b. The NGFS scenarios provide categories of broad climate change roadmaps which detail different outcomes and impacts depending on the level of policy action correlating with different levels of physical risks. The NGFS outputs provide chronic climate impacts (i.e. GDP impacts and temperature changes) and transition macro trends (i.e. carbon prices and changes in energy prices).

**Table 4: NGFS Climate Scenario Breakdown
(covering the 3 most commonly used scenarios)**

<i>Scenarios</i>	<i>Characteristics</i>	<i>Implied Temperature Rise by 2100 (°C)</i>	<i>Time Horizon</i>
<i>Orderly Transition</i>	<i>Assumes early, coordinated policy action to reduce emissions to achieve a smooth transition to a low-carbon world.</i>	<i>1.1°C – 1.8°C</i>	<i>2020 – 2100</i>
<i>Disorderly Transition</i>	<i>Delayed and divergent global policy response, leading to abrupt and disruptive action that results in delayed emissions reductions.</i>	<i>1.7°C</i>	<i>2020 – 2100</i>
<i>Hot House World</i>	<i>Assumes limited or no additional climate policies, results in high emissions and significant physical risks from climate change.</i>	<i>2.3 °C - 3°C</i>	<i>2020 – 2100</i>

- c. The IEA scenarios provide different roadmaps for the future of global energy systems, with each pathway detailing different weightings of policy ambition and technological progress. The IEA's outputs can be used in climate risk scenario analysis, particularly

transition risk assessment, to examine the impacts of changes to the energy markets, carbon pricing and investment trends.

Table 5: IEA Climate Scenario Breakdown

Scenarios	Characteristics	Implied Temperature Rise by 2100 (°C)	Time Horizon
<i>Net Zero Emissions by 2050</i>	<i>Pathway shows how the energy sector achieves net zero emissions by 2050.</i>	<i>1.6°C</i>	<i>2020 – 2100</i>
<i>Announced Pledges Scenario</i>	<i>Scenario assumes that all climate commitments made by government and industries globally are met on time and in full.</i>	<i>2.1°C</i>	<i>2020 – 2100</i>
<i>Stated Policies Scenario</i>	<i>Current energy related policies, and energy technological capabilities remain the same.</i>	<i>2.6°C</i>	<i>2020 – 2100</i>

- d. The IPCC scenarios combine the Representative Concentration Pathways (RCPs) and Shared Socio-Economic Pathways (SSPs) to describe the climate impact of a range of future emission end points relative to pre-industrial levels. The outputs of the IPCC scenarios can be used to model the impacts of acute and chronic events and trends across different climate pathways.

Table 6: IPCC Climate Scenario Breakdown

Scenarios	Characteristics	Implied Temperature Rise (°C)	Time Horizon
<i>RCP 2.6/ SSP1-1.9</i>	<i>Highly ambition mitigation scenario resulting in a rapid decline of emissions to achieve net-zero by 2050.</i>	<i>Limit Warming to 1.7°C</i>	<i>Up to 2100</i>
<i>RCP4.5/SSP2-4.5</i>	<i>Moderate policy action and technological development with emissions stabilizing by 2050.</i>	<i>Limit Warming to 2.5°C</i>	<i>Up to 2100</i>
<i>RCP8.5/ SSP5-8.5</i>	<i>Business-as-usual scenario with no additional policies, resulting in high emissions and physical climate risks.</i>	<i>Warming Exceeds 4°C</i>	<i>Up to 2100</i>

- e. Banks and Finance Companies consider a mix of indicators selecting an existing global climate scenario, depending on the objective of the climate risk stress test including the following:
 - i. Physical climate hazards in the scenario shall include acute events (i.e. flooding, tropical cyclones, extreme temperature changes), particularly for short-term scenarios, as well as chronic changes (i.e. water stress and erosion), particularly for long-term scenarios.
 - ii. The impact of physical climate risks on a country's economy (e.g. GDP growth, inflation, FX).
 - iii. Climate policy roll-out nationally and / or internationally (e.g. carbon prices, CBAM).
 - iv. Decarbonization of country's energy mixes (e.g. renewable share of primary energy consumption).
 - v. Forward-looking trends (i.e. green technology innovation).