Frequently Asked Questions (FAQs) (Version 3.0) on the Climate Risk Stress Testing Methodology Paper (CRST MP)

Issued on: 28 October 2024

Introduction

The FAQs are intended to provide further clarification to financial institutions on common queries relating to the released methodology paper on "Climate Risk Stress Testing" dated 29 February 2024. This FAQ Version 3.0 includes additional questions that were gathered from financial institutions during and after the CRST workshop held on 23 September 2024. This FAQ Version 3.0 supersedes FAQ Version 2.0. Paragraphs referred to in the table below shall refer to paragraphs within the CRST MP, unless otherwise specified.

SUMMARY OF CHANGES

Version	Date	Question	Details of Changes	Page(s)
1.0	June 2024	-	Initial version	-
2.0	Aug 2024	9	Clarification on coverage for corporate bonds	3
3.0	Oct 2024	24-26, 30, 35, 40-41, 49, 58	Additional questions have been included across relevant sections	9, 10, 13 14, 16, 18

No	Questions	Answers
General		
Participation		
1	Should the reporting template submission be split by entity?	As per Paragraph 6.2, financial institutions required to participate in the 2024 CRST exercise should submit the reporting template at the entity level.
2	Can a bank and ITO within the same financial holding group adopt different approaches in the CRST (e.g., bottom-up vs. top-down approach for sectors or lines of business)?	Yes. Banks and ITOs within the same financial holding group have the discretion to adopt approaches or assumptions in their CRST that are more relevant to the respective entity. Alignment of approaches should be on a best-effort-basis and should be documented in the qualitative portion in the reporting template.
Compliance with Climate Risk Management and Scenario Analysis (CRMSA)		
3	Does completing the CRST meet the Climate Risk Management and Scenario Analysis policy document (CRMSA PD) requirements on scenario analysis and can the CRMSA deadline be extended to match the	The CRMSA compliance deadline will not be extended to 2025. However, financial institutions making reasonable progress in conducting the 2024 CRST exercise will be deemed in compliance with Principle 4 (Paragraph 9.2), as well as Principles 12 and

No	Questions	Answers
	2025 CRST deadline?	13 of the CRMSA PD regarding strategy and scenario analysis. For more details, please refer to Question 3 of the Feedback Statement issued by BNM earlier. To clarify, the primary aim of the 2024 CRST exercise is to facilitate capacity building. Financial institutions should focus on enhancing their risk management strategies and exploring new approaches to stress testing relevant to climate-related risks. The main objective for financial institutions is to demonstrate ongoing efforts towards achieving this goal.
4	For investment banks that are unable to conduct the CRST, how would they comply with Principle 4 (Paragraph 9.2), 12 and 13 on scenario analysis in the CRMSA PD?	Investment banks may utilise their own scenario analysis approaches and assumptions to make reasonable progress towards complying with the principles on scenario analysis in the CRMSA PD. This includes the discretion to determine appropriate time horizons to estimate losses. As participation in the prescribed scenarios within CRST 2024 is optional for investment banks at this stage, they may adopt a tailored approach that suits their unique circumstances.
5	How can financial institutions distinguish between climate scenario analysis and climate stress testing, which can be defined differently in terms of risk severity (implication vs resilience)? BNM CRST MP's Feedback Statement Item 3 states that the CRST exercise can be utilised to support strategies and risk management actions required by principle 12 of the Climate Risk Management and Scenario Analysis policy document (CRMSA PD). This strategy is only acceptable for the inaugural CRST exercise. Is this to be differentiated moving forward?	Scenario analysis and stress testing are complementary approaches. Scenarios under the CRMSA are tailored to the specific risk profile of financial institutions, while the CRST specifies standardised scenarios that may or may not be fully relevant to all financial institutions. The CRST is more quantitative in nature, assessing the resilience of financial institutions under severe, plausible adverse conditions and can be viewed as a subset of the broader range of scenarios that could be relevant. Financial institutions should consider the extent to which CRST insights can inform their broader risk management strategies. For the inaugural CRST, using CRST results to support principle 12 is acceptable. Moving forward, FIs should: (a) Enhance data acquisition, management, and analytical modeling capabilities. (b) Clearly differentiate the objectives and methodologies between climate scenario analysis and the CRST.

No	Questions	Answers
6	Are there disclosure requirements under the CRST akin to that of CRMSA, such as including the disclosures in the annual report?	No, the requirements for the CRST are different. For the 2024 CRST exercise, financial institutions are expected to submit their reporting template on the entity level, directly to BNM as outlined in the methodology paper. These reports are not required to be included in the annual report or other public disclosures.
Long-term Adverse Climate Scenarios		
Scope/Coverage of Long-Term Scenarios		
7	Are financial institutions allowed to exclude loans collateralised by properties i.e., secured business loans considering Table 3 mentions that these are only "encouraged"?	While it is not mandatory, BNM highly recommends financial institutions to include secured business loans in this CRST exercise, to provide a more comprehensive assessment of potential vulnerabilities.
8	How should borrowers involved in multiple sectors be categorised into the respective CRST sectors?	Borrowers should be classified according to their Malaysian Standard Industrial Classification (MSIC) codes. These codes are specified for the respective sectors listed in the reporting template. For example, Oil and Gas (O&G) borrowers should be classified under the Mining and Quarrying sector. Financial institutions using different industrial classification standards, such as the International Standard Industrial Classification of All Economic Activities (ISIC) or the Global Industry Classification Standard (GICS), must ensure that the borrowers' sector corresponds to the relevant MSIC sectors.
9	Are banks allowed to cover only sukuk and bonds that are classified as Fair Value Through Other Comprehensive Income (FVOCI) and Amortised Cost (AC), i.e., excluding sukuk and bonds that are classified as Fair Value Through Profit and Loss (FVTPL)?	Banks are encouraged to cover all exposures regardless of their accounting treatment. However, for the inaugural CRST exercise, financial institutions may cover only sukuk and bonds classified as FVOCI and AC in the quantitative section of the template. Climate risk considerations for FVTPL bonds or sukuk may be covered under the qualitative section.
Long-term Scenario Specification		
10	Are financial institutions required to consider both transition risk and physical risk variables as part of the long-term scenario assessment? If so, how do financial institutions address the fact that acute physical risk is covered under the Short-Term Acute Physical Risk Scenario, and that chronic physical impacts on credit risk are expected to be muted before	Yes, financial institutions are required to consider both transition and physical risk variables in the long-term climate scenarios. This encompasses both chronic (long-term shifts in climate patterns like increasing temperatures and sea level rise) and acute (short-term extreme weather events) physical risk, despite having a separate short-term acute physical risk scenario. While chronic physical risks may show muted

No	Questions	Answers
	2050? Which specific physical perils should financial institutions include, at a minimum?	effects before 2050 due to their slow-moving nature, they can still influence long-term strategies by affecting asset values, operational costs, and business continuity. Chronic physical GDP impacts are incorporated into the scenarios through damage function estimations. Notably, these impacts are relatively subdued under NZ 2050 and DNZ 2050 compared to NDCs, but they are non-negligible. For example, counterfactual GDP may reduce by approximately 2% by the end of the scenario, in addition to the approximate 2% impact from Transition and Premia risks. For NDCs, the deviation in GDP level from its counterfactual progressively worsens over time as chronic physical impacts remain largely unmitigated. The CRST MP does not specify all possible perils and which to include at minimum. However, financial institutions should focus on the most impactful and relevant scenarios to the region, such as floods. These should be modeled using both historical data and/or predictive climate models to assess potential future impacts.
11	Are financial institutions allowed to incorporate additional overlays to ensure that the stress test outcome is differentiated across scenarios? To what extent can financial institutions expand the scenario specified in the CRST, given that the stress severity may not be sufficiently distinct between the scenarios?	Yes, financial institutions are allowed to incorporate additional overlays to ensure climate impacts are differentiated across scenarios. Scenario expansion may be performed by extrapolating or calibrating additional scenario variables from the set of variables provided by BNM. For avoidance of doubt, financial institutions are not expected to increase the severity of shocks beyond what is prescribed in the CRST. However, they may choose to expand scenarios to differentiate losses across sectors or geographies. Refer to Paragraphs 10.12 and 13.18 for examples.

No	Questions	Answers
12	How should financial institutions incorporate the New Energy Transition Roadmap (NETR) into their scenario analysis? Should it be applied across all scenarios?	Financial institutions should assess the impact of national policies such as the NETR by analysing how these policies may evolve and influence certain transition variables. Refer to Paragraph 10.6 for examples. This assessment may be included in the qualitative section of the reporting template. While NETR is important to understand the broader impact of transition policies in Malaysia, it is not directly applicable across all scenarios. Instead, its specific impact should be considered in the DNZ 2050 and NDCs scenarios. For clarity, financial institutions should not override NGFS scenario variables or create a separate set of variables altogether. Instead, they should qualitatively elaborate on the perceived impact of these policies under the relevant scenarios.
13	What is the suitable alignment of RCP pathways for Net Zero 2050 (NZ 2050), Divergent Net Zero 2050 (DNZ 2050), and Nationally Determined Contributions (NDCs)?	Suitable alignment of RCP pathways are as below: Net Zero 2050 (NZ 2050): This aligns approximately with RCP 2.6, aiming to limit global warming to 1.5°C above pre-industrial levels by 2100. It represents strong climate policies and significant advancements in green technology. Divergent Net Zero (DNZ 2050): This also aligns approximately with RCP 2.6 but involves a more disorderly transition. In this scenario, certain sectors face harsher regulations and unevenly distributed climate policies, leading to moderate to higher transition risks. Nationally Determined Contributions (NDCs): This aligns approximately with RCP 6.0, reflecting a scenario where policies[1] are committed to, even if not yet fully implemented, and is insufficient to limit global warming. This scenario results in a temperature rise of approximately 2.6°C by 2100, leading to a higher physical risk due to limited mitigation actions. For clarity, the focus within NDCs scenario is on the tail temperature (and physical damage) risks, corresponding more closely with the median temperature profile of RCP 6.0 than RCP 4.5.

[1] As published by the United Nations Framework Convention on Climate Change (UNFCCC) until the end of March 2022.

No	Questions	Answers
14	Which version of the NGFS Phase 3 data should financial institutions use (e.g., IAM, NiGEM and Downscaled data), since there were multiple versions of this published in 2023?	Financial institutions should use the NGFS Phase 3 data, version 3.4.
Data and Scenario Variables (e.g., MEV or GVA-related queries)		
15	Can financial institutions use regional data (e.g., "other Asia") for scenario analysis modelling where applicable, given the limited variables that are downscaled to Malaysia?	Financial institutions are permitted to supplement their analyses with regional data, especially when downscaled data for Malaysia as provided by BNM is limited in scope. This is particularly useful for scenario analysis modeling which requires a broader set of variables to accurately capture transition risks across different sectors and regions, and especially for borrowers with a geographical business presence. Additionally, financial institutions may use equivalent global variables if justified by their business operations.
16	Do financial institutions need to utilise all the data provided by BNM, or does it serve as a reference or source for their consideration as modeling data? Do financial institutions have the discretion to choose which variables to use, depending on their model needs? In the event the MEVs provided by BNM are not used in existing stress test models, do they have the option of substituting them with reasonable alternatives as recommended by internal economist teams?	The data provided by BNM serves as both a primary reference and foundational source for the financial institutions. This should form the basis of modeling and analysis efforts. It is not mandatory to utilise all data points provided, and financial institutions have the discretion to select the variables that best suit their model needs. Refer to Paragraphs 10.8 to 10.9 and 10.12 to 10.13 for more details. For MEVs not provided by BNM, financial institutions have the flexibility to use third-party data of their choice.
17	Are banks allowed to use scalar/factor multipliers in the assessment should they opt to leverage on existing Basel or MFRS 9 Credit Risk models to impute climate-adjusted MEVs (as per Paragraph 13.19)?	Banks are permitted to use scalar or factor multipliers as an approach for the assessment, provided the changes are well-justified and the models remain robust to capture climate risk over a 30-year horizon. While using scalar or factor multipliers can yield conservative results, which meet the objectives of a usual stress test, banks must balance this approach with the need to learn and develop more accurate models. If banks leverage their existing Basel or MFRS 9 Credit Risk models to impute climate-adjusted MEVs provided by BNM, any substitution with alternatives must align with the long-term and short-term scenarios prescribed by BNM. Any additional parameters and assumptions must be clearly explained to BNM in the qualitative section of the reporting template.

No	Questions	Answers
18	Why do the macroeconomic variables (MEVs) provided by BNM use different confidence levels for temperature profiles among the three scenarios?	The variation in confidence levels for the temperature profiles among the three scenarios follows the modeling used by the NGFS and captures the effect of climate uncertainty in the damage estimates, especially in scenarios with limited mitigation efforts. NZ 2050: Damages correspond to the 50th percentile of the expected temperature profile. DNZ 2050: Damages correspond to the 50th percentile of the expected temperature profile. NDCs: Damages correspond to the 95th percentile of the temperature profile to account for tail physical risks. This approach ensures that the different levels of climate uncertainty are appropriately reflected in the damage estimates.
19	For other countries' macro-financial variables and transition risk variables, can financial institutions adopt any NGFS Phase 4 forecasts, as some may be required for modelling purposes?	For the 2024 CRST exercise, BNM mandates the use of NGFS Phase 3 scenarios, as specified in the CRST MP. This requirement aligns with the climate scenario parameters released in September 2022. While NGFS Phase 4 may offer more recent forecasts and insights, BNM's current specification for the 2024 exercise explicitly references and requires adherence to the NGFS Phase 3 specifications. Adopting a mixture of Phase 3 and Phase 4 forecasts for the scenarios could result in inconsistencies and may require financial institutions to consider new parameters, climate pathways and outcomes. In this regard, BNM may not want to impose an unnecessary burden on financial institutions to include these considerations. If financial institutions are considering incorporating NGFS Phase 4 data for other analytical purposes or in preparation for potential future requirements, it would be advisable to confirm with BNM whether such an update aligns with regulatory expectations and guidance for the CRST exercise.
20	Why are there no relevant variables for simulating the transition and physical risk impact on hire purchase loans/financing? Additionally, why is the physical risk impact on hire purchase loans/financing typically not modeled?	The current CRST MP does not include distinct variables for hire purchase assets, due to limitations in obtaining precise and granular risk estimations. The physical risk impact on hire purchase loans/financing is not typically modeled due to the complexities in assessing risks for mobile assets. For the short-term scenario, financial institutions might use catastrophe models specific to loan types, which can vary

No	Questions	Answers
		significantly between property and vehicle loans. This approach prevents them from adopting a less detailed, one-size-fits-all method for risk assessment. Additionally, data availability is a concern. Unlike property loans where risks can be mapped to specific postcodes, it is more complex to apply similar granularity to the location and risk assessment of motor vehicles. Nonetheless, financial institutions may use borrowers' addresses as proxies when quantifying credit risks for these movable assets.
21	For the macroeconomic variables (MEVs) provided by BNM, do financial institutions need to interpolate the transition variables for the years where the information was not provided? (e.g., Tab Transition Variables_1 does not provide data for the years 2024 and 2026 to 2029). To note, financial institutions are required to perform annual projections for the years 2024 to 2029, followed by a 5-year projection starting in 2030.	Yes, financial institutions are required to interpolate the transition variables for the years where the information was not provided. This is to ensure continuity and consistency in the annual projections from 2024 to 2029.
22	For gross value added (GVA) variables, is there guidance for countries in addition to Malaysia, considering there may be foreign counterparties or counterparties' parent home countries involved in GVA forecasts.	BNM will not be providing additional data to supplement the scenarios prescribed in the CRST exercise. As stipulated in Paragraph 10.13, financial institutions are encouraged to use their own specifications for variables that are not provided, as long as these align with the prescribed scenarios. These additional assumptions should be specified in the qualitative section of the reporting template.
23	What is the level of granularity required by BNM as per Paragraph 13.9, where financial institutions are required to ensure that models used are sufficiently granular to differentiate between drivers of losses across various climate scenarios?	The intention of para 13.9 is to ensure that financial institutions are able to differentiate the climate impact of the various sectors which will help them make better-informed risk management decisions. Financial institutions are allowed the flexibility to decide on the level of granularity necessary to ensure the differences between sectors and scenarios are captured. This is also intended to acknowledge the different levels of capabilities and data availability of various financial institutions in carrying out this exercise. Where possible, financial institutions should attempt to provide as much detail as possible to support their CRST assessments and results.

No	Questions	Answers
24	How does BNM select scenarios within the same quadrant, such as choosing NDCs (Nationally Determined Contributions) instead of Current Policies?	BNM chose scenarios like NDCs over Current Policies because the NDCs reflects planned or pledged actions that countries, including Malaysia, have committed to for addressing climate change. In contrast, Current Policies assume that no new climate policies will be introduced, which may underestimate the shifts in policy that are likely to happen in the future. This scenario might not be reflective of the evolving climate policies as countries respond to climate risks. Note: NDCs selected reflect updates and revisions up to March 2022 under NGFS Phase III
25	Why was REMIND IAM chosen instead of alternatives like GCAM or MESSAGE, and how does this align with other regulators who use GCAM?	REMIND-MAgPIE was selected as it is widely used by NGFS to present scenario results. However, no single model is superior, and a good practice is to use a combination of models to capture uncertainty. Financial institutions are encouraged to refer to climate data from all three IAMs (REMIND, GCAM, and MESSAGE) available through NGFS.
26	How are the NGFS metrics downscaled to fit Malaysia's context, and are the assumptions used in the downscaling applicable without further customisation?	NGFS downscaling methodologies generate pathways consistent with historical data and regional IAM projections, ensuring initial conditions are considered. However, given the standardised approach, no further specific country-by-country policies are incorporated. As the results are meant to be scenarios, rather than forecasts, they remain usable in the context of this CRST.
Time Horizon		
27	Paragraphs 11.2 and 14.10 set out December 2023 as the starting position. Can financial institutions use a different starting position?	Financial institutions must use December 2023 as the starting position i.e., no deviations allowed. This is to ensure standardisation of base positions across financial institutions. For those with financial year end other than December, adjustments should be made to reflect a cumulative position from January to December 2023.
Balance Sheet Assumptions		
28	Should financial institutions assume any additional lending during the stress horizon?	Financial institutions should not assume any additional lending or changes in the composition of the balance sheet throughout the stress horizon in both long and short-term scenarios. This approach allows financial institutions to focus on estimating the impact of the specified risk scenario under existing balance sheet

No	Questions	Answers
		conditions, without the complications that future lending activities or other management actions might introduce.
29	For ITOs, should stressed variables be applied to baseline position figures for each year in the stress horizon i.e., similar to usual stress testing practices?	ITOs should use the 2023 position as a starting point for each year in the stress horizon, rather than projecting a baseline balance sheet position for subsequent years (i.e., in 2024, 2025, 2026, etc.). This approach is used to project gross and net benefits/claims payout and losses for each respective year. For example: <u>2024 Gross Claims/Benefits Payout:</u> • Baseline gross actual claims or benefits payout and losses as at 2023 + Change (estimated addition) in payouts/losses which are induced by the climate scenario path in 2024 based on baseline gross claims exposures in 2023. <u>2030 Gross Claims/Benefits Payout:</u> Baseline gross actual claims or benefits payout and losses as at 2023 + Change (estimated addition) in payouts/losses which are induced by the climate scenario path in 2030 based on baseline gross claims exposures in 2023.
30	For ITOs, how should the impact of climate risks on benefit payouts reflected in the balance sheet for a given year? Referencing BNM's reporting template for ITOs, taking the reporting for year 2024 as example: • Tables 2.1 in Tabs 1B to 1D are to capture climate risk impact on benefit payout over 1 year period of year 2024 • Tables 3.1 in Tabs 1B to 1D and Tab 1E are to capture climate risk impact on asset and net liabilities respectively. The impacts are measured as of 31 Dec 2024	The estimations of benefits payout in Table 2.1 in Tabs 1B to 1D and estimations of assets in Table 3.1 in these tabs should be coherent. For example, the impact of higher benefit payouts should be reflected in lower cash balances, assuming the company does not need to liquidate any financial assets. However, for the purpose of providing additional information under Tab 1E, the impact on net liabilities should be isolated from the other tabs. This means that the impact on liabilities is measured only from changes in discount rates and other economic assumptions or inputs for Part 1 and changes in insurance/takaful assumptions (while assuming the discount rate remains fixed at the 2023 base position) for Part 2.

No	Questions	Answers
Quantitative assessment of Credit Risk		
31	Are ECL estimates expected to include changes in staging, or would a simpler methodology i.e., Probability of Default (PD) or Loss Give Default (LGD) scaling, be sufficient?	Post-shock ECL projections for a specific year within the stress horizon should account for changes in borrowers' weighted 12-month PD and LGD for performing exposures (both stage 1 and stage 2 exposures) from their base position using end-2023 figures. There is no requirement to distinguish between Stage 1 and Stage 2 exposures in the ECL estimates, as the changes in PD will inherently capture the necessary adjustments.
32	Based on paragraph 12.1, how should financial institutions estimate the Exposure-at-Default (EAD)? Based on paragraph 12.5, what are BNM's expectations regarding the projection of Expected Credit Loss (ECL) for the period 2024 to 2050?	The Exposure-at-Default (EAD) in each year of the stress horizon should be non-cumulative between 2024 and 2050. The sum of both performing and non-performing EAD in each year must equal to the total EAD in their base position (i.e., end-2023). However, the composition between performing and non-performing EAD may change due to some exposures expected to turn default in a given year. For avoidance of doubt, any non-performing loans and additional claims or benefits payout that are added or reduced a given year, should not be accounted for in the following year. Notably, financial institutions could see their CRST results moderating (from baseline position) over the long-term across all climate scenarios. Refer to Paragraph 13.7 for more details. Similarly, for Expected Credit Losses (ECL), banks should reflect the non-cumulative stock position for all performing and non-performing exposures in each year between 2024 and 2050. This should be calculated based on EAD, PD and LGDs that have accounted for climate, macroeconomic and financial market variables prescribed by BNM in each respective year, embodying both physical and transition risk. If banks project no further change in ECL in a respective year, total ECL for that year shall be equal to the total ECL as of 31 December 2023. For example: <u>Total ECL in 2024:</u> Total ECL as of 31 December 2023 + Change (estimated addition or reduction) in ECL induced by the climate scenario path in 2024.

No	Questions	Answers
		Total ECL in 2030: Total ECL as of 31 December 2023 + Change (estimated addition or reduction) in ECL induced by the climate scenario path in 2030.
33	How would the insurance/takaful certificates offset the estimated losses, e.g., PD and LGD, as per Paragraph 13.15? Are they only relevant to resilience similar to recovery framework?	The relevance of insurance or takaful certificates within the CRST MP framework primarily contributes to resilience, akin to a recovery framework. However, insurance or takaful certificates can help banks offset the estimated losses through either PD or LGD. Banks may determine which effect is most likely but should be careful about not 'double-counting' the offsetting effects. For example: Reducing LGD: Policies such as fire insurance can lower LGD by providing payouts for collateral damage (e.g., fire-damaged property), enhancing recovery in default scenarios and thus reducing potential losses for the bank. Impact on PD: Effective insurance can indirectly influence PD by ensuring financial stability to borrowers during adverse events. For example, if a business' property is damaged by a climate-related event, insurance can facilitate quicker recovery and continuation of operations, helping maintain debt repayment ability.
34	Do banks need to consider collateral haircuts (adjusted for climate) or credit mitigation techniques in estimating the LGD (i.e., collateral value or loan recovery) which is a factor in Expected Credit Loss ECL? Does BNM expect banks to factor in the insurance (similar to collateral) into the loan recovery or cure rate for LGD modelling?	Yes, banks must consider both climate-adjusted collateral haircuts and other credit mitigation techniques when estimating LGD. This approach is essential given that climate-related risks can significantly impact the valuation and the recoverability of secured assets (refer to Paragraphs 13.17 and 13.18 for more details). Additionally, banks have the option of factoring in existing insurance policies into loan recovery or cure rate for LGD modelling akin to collateral, enabling the use of these policies to mitigate estimated credit losses, similar to how collateral would function in reducing potential losses (as detailed in Paragraph 13.15).

No	Questions	Answers
35	In determining the ECL estimation for the CRST, should the banks assess the credit risk on the borrower only or the guarantor as well?	Financial institutions should adopt the same approach that is used for credit risk stress test when conducting the CRST. Therefore, financial institutions should assess the climate risk impact on guarantors and/or borrowers, depending on how guarantors are currently treated for purposes of ECL estimation.
Businesses Credit Risk – Counterparty Level Assessment		
36	Can financial institutions extrapolate the PD, LGD, or financial indicators of selected counterparties to other counterparties within the same sector?	Financial institutions are allowed to extrapolate or make assumptions on their counterparties' data, including credit risk information such as PD and LGD, so long as these proxies are reasonably justified and documented. BNM expects the reliance on proxies and assumptions to reduce over time as financial institutions build their capacity and capability.
37	How should financial institutions' credit assessment incorporate the Climate Change and Principle-based Taxonomy (CCPT) assessment into the counterparty-level assessment?	Under the CCPT, financial institutions are required to evaluate their borrowers' overall business impact to the environment, including effectiveness and plausibility of borrowers' climate mitigation and adaptation plans prior to categorising the borrower. For the CRST, financial institutions should consider these evaluations as supplementary to their methodologies and assumptions in determining each borrower's expected credit loss (ECL). For example, if a financial institution determines that a borrower's resultant ECL does not align with their CCPT classification – which may capture nuances in the borrower's effort to meet climate objectives and transition to a low-carbon economy – adjustments to assumptions may be warranted.
38	What do climate-related strategies refer to in the context of Paragraph 13.22?	Climate-related strategies here refer to adaptation and mitigation plans, as well as transition plans. These strategies should include any actions taken to lower the negative effects or mitigate harm caused by climate change (climate adaptation), any effort to reduce or prevent greenhouse gas emissions (climate mitigation) and any plans for transitioning to a low-carbon economy. Banks may utilise the counterparty due diligence assessments conducted for CCPT purpose to obtain this information.
39	Based on Paragraph 13.23, what are the implications of using proxies? Is it sufficient to evaluate whether the proxies being used are potentially under or overstating the results or	BNM acknowledges the potential unavailability of certain granular data and supports the use of proxies, where necessary. This is particularly relevant when direct data about specific risks, such as detailed property assessments or

No	Questions	Answers
	should banks also highlight limitations of the methodology/data being used? For example, certain data such as the impact of climate risk at a collateral level may require extensive effort to extract at a granular level, necessitating the use of proxies.	localised climate impacts, are not accessible. Proxies can be based on similar asset classes, geographic data, or industry benchmarks that reflect comparable risk characteristics. Banks are expected to evaluate whether the proxies might lead to results that either under- or overstate climate-related risks. This includes an evaluation of (i) the rationale for selection of the proxies; (ii) how they align with the broader objectives of assessing climate-related financial risks; and (iii) limitations or uncertainties associated with their use and how these limitations could skew the results. This critical assessment ensures reliable stress testing outcomes.
40	For the Top 10 Counterparty stress testing, should the assessment only be applied to loans exposures (excluding sukuk/bond exposures)? *Refer to Footnote 7 in the Bank_Quant_LT tabs in the BNM's reporting template for banks*	Yes, the counterparty-level assessment should be conducted for the Top 10 borrowers based on loan or financing exposure size, excluding sukuk/bond exposures. This is to ease financial institutions in conducting the counterparty assessment, as banks presumably would have a better view of their counterparties with loan exposure relationships compared to bonds. However, if financial institutions deem sukuk or bond exposures as more appropriate or better at capturing climate risks, they may decide to include them. In such cases, this should be clearly indicated in the Comments section in the reporting template.
41	For counterparty assessment, if data on a subsidiary's sector or main economic activities is limited, can banks use the parent company's data as a proxy (Paragraph 13.24)?	Where available, counterparty analysis should be conducted at the borrower level to ensure robust and accurate assessments. This requires banks to engage in active conversations with borrowers on necessary information needed to perform the analysis. However, where proxy data from the parent company is used, banks must ensure that the proxy is appropriately justified, and the classification of counterparties is aligned with the parent company's main economic activity or sector. This should be noted accordingly in the Comments section in the reporting template.
Household Credit Risk		
42	Based on Paragraph 13.26 (a), what is the expectation on estimating climate-related impacts since the industry does not generally have such requirements e.g., banks do not typically consider price differentiation due to potential impacts of climate change?	While there may not currently be industry-wide requirements to consider climate-related impacts onto the household lending portfolio, banks are still expected to estimate how climate-related risks may translate into credit losses for these borrowers for the purpose of this exercise. This is in line with the goal of capacity building and the exploration of

No	Questions	Answers
		methods in this inaugural CRST exercise. Refer to Paragraphs 13.27 and 13.28 for details on possible approach.
Quantitative Assessment of Market Risk (ITOs)		
43	Is a look-through approach required to be adopted for Collective Investment Scheme (CIS)?	Yes, ITOs should use the look-through approach when assessing their CIS investments. This ensures a more granular and accurate assessment by considering the impact of changes in financial market conditions on the underlying assets of the CIS. If any simplifications are made to achieve similar or more prudent outcomes than the full look-through approach, ITOs must clearly explain these adjustments. In cases where the look-through approach cannot be applied, rationales must be provided in the reporting template.
44	What will be the treatment on surplus sharing either from re-takaful or surplus arising from internal risk fund?	For this CRST exercise, the focus will be solely on measuring losses from financial market movements and claims and/or benefits paid due to climate-related events.
Quantitative Assessment of Insurance and Takaful Risks (ITOs)		
45	Should ITOs use the potential default rate of reinsurers in the baseline scenario, to fulfill the requirements of Paragraph 13.38?	ITOs are to differentiate between baseline assumptions in reinsurer default and the incremental financial impact of increases to default risk due to climate change, if any.
Qualitative Assessment of Market, Credit, Liquidity and Operational Risk (For banks and ITOs)		
46	Should the approach and assumptions for qualitative assessment on market, operation and liquidity risk be differentiated across scenarios?	Approach and assumptions for each of the risks should be considered for each scenario. However, if the approach is common across scenarios, financial institutions may stipulate this accordingly in the reporting template.
Short-term Acute Physical Risk Scenario		
Scope/Coverage of Short-Term Scenarios		
47	May financial institutions use existing sectoral-level models to estimate the impact on construction loans?	Yes. Financial institutions may use their existing sectoral-level models to estimate the impact on construction loans. However, financial institutions should assess if the use of such models is appropriate and relevant in the context of assessing flood risk.
48	For ITOs' short-term scenario portfolio coverage, can other lines of businesses that are deemed material	Paragraph 16.1 denotes that ITOs must, at minimum, quantitatively assess the impact of the flood event on all flood risk coverage for

No	Questions	Answers
	(e.g., marine cargo, goods in transit etc.) be included in the portfolio coverage?	motor vehicles and properties within insurance policies and takaful certificates. Nevertheless, ITOs may include lines of business other than those stipulated in the 'required' and 'encouraged' portfolio coverage. This must be included in the 'Others' fields in the reporting template and clearly stipulated in the comment column.
49	What is the definition of construction loans under the CRST short-term scenario (Table 4 in the Methodology Paper)? Does it include end-financing or loans for both individual and non-individual customers?	Construction loans refer to loans with the CCRIS loan purpose code of 'Construction' (6100). This may include loans extended to both individual and non-individual customers.
Short-term Scenario Specification		
50	Why set 1-in-200-years as opposed to something less severe e.g., 1-in-100-years?	The exercise requires financial institutions to use a 1-in-200-years flood event for the short-term acute physical risk scenario. This is to ensure preparedness for potential conditions that are much worse than what has been historically observed, reflecting the reality of escalating climate change impacts. BNM recognises the trade-offs in setting such a severe scenario. Notably, historical data on 1-in-200 year events are considerably limited, making the calibration of models to an event of that magnitude challenging and imprecise. These limitations are acknowledged and are to be expected in a stress testing context where financial institutions often have to test against events with no historical precedence.
51	Will BNM provide any national-level macroeconomic and/or climate-related variable forecasts for the one-off 1-in-200-years flood event?	No climate data or macroeconomic variables (MEVs) will be provided for the short-term acute physical risk scenario. Financial institutions are expected to source for relevant information and data to complete this exercise, guided by the scenario specification in Paragraph 14.1. BNM acknowledges that in practice, the broader macroeconomic and financial impact from the flood scenario specification may last beyond the duration of the actual flood event. As per paragraph 14.1(b), financial institutions are expected to bring forward the expected impact of future climate conditions from the year 2050. Therefore, they are encouraged to look beyond the traditional MEV models used for stress testing to capture a more instantaneous impact of the MEVs onto PD and LGD estimates.

No	Questions	Answers
		Financial institutions have the flexibility to explore flood risk-specific models or those that are able to establish a clearer and more direct link between flood damage in a given location and their portfolio exposures, as opposed to relying on traditional stress testing approaches based on the use of MEVs. Paragraph 14.4 provides further details as to why such traditional approaches may not provide the best assessment of flood risk. In this regard, BNM encourages industry to explore opportunities for coordinated efforts to share experiences, resources and data, where relevant.
52	Is the Short-term Acute Physical Risk Scenario a standalone scenario or to be done together with the other three NGFS scenarios?	The Short-term Acute Physical Risk Scenario outlined in the MP is intended to be a standalone scenario. It specifically addresses the impact of a one-off 1-in-200-years flood event in Malaysia, under the RCP 8.5 scenario for the year 2050, and is separate from the long-term NGFS scenarios (NZ 2050, DNZ 2050, and NDCs) which are used to evaluate broader, long-term climate risks.
53	What about flooding across multiple days? Why specify just a one-day flood event?	The short-term scenario specifies that the flood event occurs on 1st January 2024, but it does not place limitations on how financial institutions should interpret the severity of the 1-in-200-years RCP8.5 scenario thereafter. For example, financial institutions may reasonably conclude that some locations under this scenario would see rainfall persist beyond 1st January, with waters receding only after several days.
54	Should financial institutions factor in the severity (i.e., depth of flood) of the flood events in the assessment?	Yes, beyond identifying areas that are affected by floods, financial institutions must meaningfully differentiate the severity/estimated hazard by location. This differentiation should be done, at a minimum, at the postcode level. For example, assigning the same hazard impact to all postcodes in Kuala Lumpur would not meet the requirements of the exercise. Refer to Paragraph 14.7 for further details on this expectation. The exercise does not specify which variables to use when trying to estimate the impact of the hazard. However, flood depth is generally seen as one key variable to do so. More sophisticated approaches may also consider variables such as flood velocity and flood duration, among others.

No	Questions	Answers
		Additionally, financial institutions may also opt for a more granular spatial resolution in their assessment of flood risk. Refer to Paragraph 14.8 for further details.
55	Would financial institutions be allowed to use exposure disaggregation tools for exposures that lack postcode data?	Financial institutions may use such tools to distribute exposures across postcodes, if postcode data is not available. Additionally, these tools can be used to achieve granularity, such as exposures at the coordinate level. However, they must ensure that such tools are suitable for their intended use and result in a reasonable disaggregation of exposures, as outlined in Paragraph 14.8. It is also important to note that the reporting template requests impact data at the state level, as this data should be readily available from assessments conducted at postcode level.
56	Will there be a separate short-term physical risk scenario for stressing the Treasury products to be prescribed by BNM?	No, BNM will not prescribe a separate short-term physical risk scenario specifically for stressing Treasury products. Banks can refer to Paragraph 15.1 to 15.3 for details on which portfolios should be assessed for the short-term acute physical risk scenario.
57	How should financial institutions interpret the 75% portfolio coverage requirement set out in paragraph 14.6?	Financial institutions should first identify the required portfolio segments for the short-term exercise. Banks and ITOs can refer to Paragraphs 15.1 to 15.2, and Paragraph 16.1, respectively. Next, financial institutions should assess if their coverage of flood risk (i.e., the flood map used for the risk assessment) is sufficient to cover the key economic areas specified (i.e., Selangor, Penang, Johor, W.P. Kuala Lumpur). Finally, at a minimum, financial institutions should ensure that at least 75% of the required portfolios identified, in RM value terms, are covered in their flood risk assessment.
58	Can BNM provide flood map data to financial institutions?	BNM acknowledges that some financial institutions face challenges in sourcing or developing flood risk maps and strongly encourages the industry to collaborate on solutions through platforms such as JC3 sub-committees. BNM remains committed to working alongside financial institutions to explore potential solutions.

No	Questions	Answers
Data and Scenario Variables		
59	Would there be a flood risk baseline to conduct the assessment and if not, what data would be required to establish the baseline?	The exercise does not explicitly require financial institutions to conduct a baseline flood risk assessment and as no such baseline scenario is specified. There is no requirement for financial institutions to project a 2024 baseline position, before applying shocks. Instead BNM simply requires financial institutions to adopt starting positions as at 31st December 2023 (e.g., outstanding loan and collateral values). However, one data item specifically for banks in the short-term scenario, which is the pre-shock total Expected Credit Loss (ECL), would necessitate a baseline view of ECL for the year 2024. For this, banks can choose to provide any existing baseline ECL projections for 2024 that are available or, depending on when the exercise is conducted, provide the actual realised ECLs for 2024. The intention here is to allow banks the flexibility in modelling their flood risk in novel ways without feeling the need to restrict the modelling of flood risk shocks to the same methods used to model a baseline stress test scenario. Regardless of how banks form this baseline ECL for 2024, a key principle to abide by is to ensure that both pre- and post-shock estimations for all variables attempt to clearly capture the impact of flooding alone when comparing between pre- and post-shock reporting.
60	Based on Paragraph 14.6, do financial institutions need to separately consider the impact of fluvial and pluvial floods?	Financial institutions do not need to separately model and report the impacts of fluvial and pluvial floods, or to disentangle the impact of both types of flooding. They may use a unified flood map that combines both types of flooding. Paragraph 14.6 requires that the flood map should at least consider (i) both fluvial and pluvial flooding, (ii) covering key economic areas, and (iii) including a sufficient portion of their portfolios as specified. For the avoidance of doubt, financial institutions can incorporate other types of physical risks provided by third-party vendors for their internal projections as they see fit, but for the purposes of the CRST only flood risk should be considered.

No	Questions	Answers
61	What is the rationale for requiring ITOs to quantitatively assess the impact of flooding on motor vehicles, since it is not a static exposure like properties?	Quantitative assessment is required due to the significant business exposure of general ITOs in the motor segment. High vehicle ownership rates in Malaysia mean that flooding can lead to substantial claims, necessitating a thorough understanding of this risk. For the avoidance of doubt, reinsurers must also include motor vehicles in their quantitative assessment for the short-term scenario to ensure comprehensive risk evaluation and preparedness.
Time Horizon		
62	Based on Paragraph 14.1(b), does BNM expect the impact of physical risk in 2050 to be brought forward to 2024? Additionally, as per Paragraph 14.9, is the expectation that the impact of the full 27 years is to be brought back to Jan 2024 and if so, how should financial institutions do this?	The specification of Year 2050 does not mean that financial institutions must assess how a flood would impact their portfolios in 2050, and consequently discount the impact back to 2024. It also does not require financial institutions to account for the cumulative impact of flooding over the 27 years from 2024 to 2050. Rather, the specification of Year 2050 refers to the RCP8.5 projections. The intensity of climate variables projected under the RCP scenarios varies over time, generally increasing in intensity under RCP8.5. This means that a 1-in-200-years flood in 2050 would be more severe than a 1-in-200-years flood in 2024. Financial institutions need only establish the severity of the flood event specified, based on the RCP8.5 Year 2050 projections, and assume that the flood event occurs on their portfolios today. No discounting of impact or losses is applicable in this case.
Reporting Requirements		
63	What are the minimum expectations for this validation exercise expected in Paragraph 17.2? Are the 2024 CRST results required to be validated?	In conducting validation exercises of CRST approaches and assumptions, financial institutions should adhere to their existing processes and procedures for validating stress testing models as well as relevant BNM policy documents on stress testing. There is no specific requirement on the appropriate party to conduct the validation exercise, but financial institutions must ensure the validation process is kept independent. While there is no explicit requirement for external validation of the 2024 CRST results, financial institutions should adhere to their internal stress testing procedures. Among

No	Questions	Answers
		others, these results must be presented to the Board, which is expected to provide constructive challenge before they are shared with BNM.
Others		
64	In the reporting template, Tab 2A. (Overview), is question 12 referring to long-term or short-term scenario?	This should refer to the short-term scenario. The revised template with the amendment has been reuploaded into BNM's regulatory handbook and website.

This FAQ may be updated by BNM from time to time. Should you have additional queries related to the policy document, please submit your queries via email to CRST@bnm.gov.my.