BERMUDA MONETARY AUTHORITY

GUIDANCE NOTES

MANAGEMENT OF CLIMATE CHANGE RISKS FOR COMMERCIAL INSURERS

March 2023

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I. INTRODUCTION

1. Climate risk is a global issue, and it is far-reaching in impacting the physical and macroeconomic environments in which insurers operate. Given the latitude of their implications and long-term nature, climate-related risks can become a significant financial risk to insurers and, as a result, the underlying stability of the financial sector. Therefore, robust management of climate risk is crucial to ensuring and maintaining the financial soundness and ongoing viability of the insurance sector in general, as well as insurers' abilities to contribute to an orderly transition to a net zero economy. The Bermuda Monetary Authority (Authority or BMA) is of the view that a comprehensive, long-term risk management approach sets the ground for insurers' capabilities to offer solutions that support climate risk mitigation and adaptation, which gives insurers a key role in closing protection gaps.

2. While climate risk impacts the entire insurance market, this Guidance Note outlines the Authority's expectations for commercial insurers and insurance groups (both referred to hereafter as 'insurer') regarding their management and reporting of climate change risks. Specifically, the guidance focuses on corporate governance and risk management practices for climate risk.

3. Climate-related risks can impact not only insurers' underwriting activities but also their operations and investments, which can have a direct impact on the ability to satisfy policyholder obligations.

4. As with other key risk areas, insurers are expected to take a proactive approach to manage and, where possible, mitigate the risks associated with climate change (e.g., the increase in frequency and severity of natural catastrophe-related losses). While this is a more visible risk, the Authority also expects there to be other impacts that arise from climate change and affect insurers' roles as investors and underwriters that can have a significant bearing on the future sustainability of the insurance industry.

5. Given the important role of the insurance industry in Bermuda in relation to climate risks, the Authority expects insurers to not only assess the impact of these risks on their operations. The Authority also expects them to ensure that the processes and controls that are established to mitigate and manage these risks are appropriate to the insurer and fully integrated into operations. This includes the insurer's strategy and governance structure.

II. GENERAL PRINCIPLES AND EXPECTATIONS

6. This Guidance Note applies to commercial insurers and seeks to take into account the diversity of these insurers in the market. While it targets the minimum standards the BMA expects insurers to embed into their operations, the Authority's expectations continue to be based on the principle of proportionality. Therefore, an insurer's application will be dependent on the nature of its operations and the scale, complexity and risk profile of its insurance business, as well as its materiality assessment for climate risk overall and within the various individual risk categories. It should be commensurate with the nature and magnitude of the insurer's climate risk exposure.

7. The Authority further acknowledges that a fully-fledged climate risk management framework may not be currently embedded by insurers. Nevertheless, insurers will be expected to provide in their relevant year-end Own Risk and Solvency Assessment (ORSA), Commercial

Insurer's Solvency Self-Assessment (CISSA), starting with their year-end 2022 ORSA/CISSA, on a best effort basis, an initial overarching view of how climate change risk and its exposures affect the insurer in outline key climate change risk exposures and any approaches to tackling them, along with an indication of priorities for 2023 and an outlook on arriving at an action plan to be implemented in meeting the requirements by year-end 2025. From year-end 2023 onwards, insurers are expected to carry-out an overarching climate risk status assessment regarding the implementation of an appropriate framework that includes a clear action plan, inclusive of timelines and a prioritisation approach. CISSA should indicate the appropriateness of, and implementation progress for, policies, procedures and other relevant matters, such as governance by the insurer's board of directors (board) and senior executives. In relation to the assessment, review and monitoring of such risks, the framework and measures are to be adopted and fully operational on or before year-end 2025. The Authority expects continuous advancement and aims to monitor the progress of this regime by insurers via offsite data analysis and on-site visits from 2023 onwards. The Authority, therefore, recommends that insurers include updates on action plan implementation in the CISSA on annual basis.

8. The Authority acknowledges that the risks resulting from climate change are still evolving. Therefore, it requests that insurers regularly evaluate both their operations in light of the risks and the control mechanisms implemented to assess those risks to affirm that both will continue to be relevant and operate effectively.

9. It is an expectation for adequate policies or procedures to be developed that properly address climate change risk management; in case that a single overarching climate change policy may not be in place, and rather existing policies (e.g. underwriting, investment, etc.) may have climate change components embedded within them, then the Authority deems that to be an adequate approach as well under the condition that all material climate change risks aspects are covered. This principle applies to all mentions of policy expectations outlined in this Guidance Note. The chosen climate change policies and procedures approach should be outlined by the insurers.

III. DEFINITIONS

'Act' – means the Insurance Act 1978.

'CISSA' – refers to the Commercial Insurer's Solvency Self-Assessment required of commercial entities operating in Bermuda. The term is used in this Guidance Note to also reference the Group Solvency Self-Assessment (GSSA) required of Groups, with both well-known together as Own Risk and Solvency Assessment (ORSA).

'Climate change risk, climate-related risk and climate risk' – are used interchangeably, having typically two drivers of risk: transition risks and physical risks.

'Enterprise Risk Management (ERM) framework/risk management framework' – has the meaning set out in the Insurance Code of Conduct.

'Insurance Code of Conduct' – means the Insurance Code of Conduct issued by the Authority.

'Insurer' for the purposes of this Guidance Note means commercial insurers, namely classes 3A, 3B, 4, C, D and E as such classes are defined in the Act, and insurance groups.

'Insurance group' – has the meaning given under section 1 of the Act.

'Long-term insurer' – has the meaning given in section 1 of the Act.

'Physical risks' – mean risks which arise from the physical impacts of climate change. They may arise as acute physical risks such as weather-related events manifesting in, for example, increased property damage or through subsequent events such as disruption of global supply chains or resource scarcity. They may also arise as chronic physical risks from longer-term changes in the climate, such as temperature changes and rising sea levels, biodiversity loss and changes in agricultural productivity, which can also result in increasing ill effects on human health that affect morbidity and mortality patterns.

'Transition risks' – mean risks that may arise from the transition to a low-carbon economy. These may, for example, lead to the reassessment of asset values in climate-sensitive sectors. Transition risks may be driven by policy changes, market dynamics, technological innovation or reputational factors and may be amplified through an unorderly process.

IV. MATERIALITY ASSESSMENT AND DOUBLE MATERIALITY

10. Insurers should conduct a materiality assessment of their exposure to climate change risks, as a greater focus on risk management activities and level of detail in the CISSA is expected for material climate change risks. The Authority would, for example, not expect a full scenario analysis to be carried-out on risks that are not material. Evidence of the materiality assessment should be maintained for review as well, particularly for those risks deemed not material.

11. The BMA recognises that climate change risk exposure and its impact on the insurer can evolve and change over time. The materiality assessment should therefore be regularly repeated and based on both current and forward-looking exposures. It should also consider the current status and potential future changes in the business model, strategy and external factors and consider all physical and transition risk drivers. Stress tests and scenario analyses, even those simplified or qualitative in nature with both short and long-term time horizons, are useful tools that can greatly assist in the materiality assessment.

12. In approaching their materiality assessment insurers may want as a starting point to build on existing, generally accepted materiality assessment concepts, and consult, for example, material published by other regulatory bodies on the topic, e.g., European Insurance and Occupational Pensions Authority.

13. This Guidance Note is focused on how climate change impacts risks that are transferred to insurers ('single materiality'). Nevertheless, the Authority expects insurers to also specifically consider their own external impact on climate change (i.e., double materiality) by focusing on areas that may also revert back and affect in the short, mid or long-term their reputation with stakeholders and their strategy, as a consequence their own financial

performance and operations. In this context, the Authority would like to highlight that, despite being an evolving concept, a consideration of specific aspects of double materiality is key to ensuring the financial soundness of the sector as a whole in the long term. Considering this, the Authority encourages insurers to further develop their approach and capabilities.

V. CORPORATE GOVERNANCE

14. The Insurance Code of Conduct requires every insurer to establish and maintain a sound governance framework, which provides for appropriate oversight of the insurer's business and adequately recognises and protects policyholders' interests. Such a framework, in the application of the proportionality principle, should vary based on the nature, scale and complexity of insurers.

15. The ultimate responsibility for sound and prudent governance and effective oversight of an insurer rests with the board. Therefore, the board (which would include any committees created or convened by the board in carrying out its remit for the purposes of this Guidance Note) should have clearly documented responsibilities for managing, inter alia, climate change risks. Therefore, an insurer's approach to strategy setting, governance and oversight should expressly consider the transversal character and the long-term nature of climate risk and address all relevant risk areas.

16. The board should have sufficient knowledge of and assess the financial risks that may stem from climate risk factors that affect the insurer. The board should also be able to address and oversee these risks within the business strategy and risk appetite.

17. In their CISSA filings, the Authority expects insurers to document their processes for identification, measurement, management and reporting of climate risks in line with their strategy.

18. To ensure a forward-looking, prudent and responsible approach to handling all aspects of climate risks, climate risk should be incorporated into the governance processes and framework, reflecting how this is ensured and executed. Insurers should ensure that all relevant control and business functions have the requisite expertise and skills to give due consideration to the risk posed by climate change. In order to ensure this, a review should be undertaken to ascertain the necessary knowledge and skillset required.

19. When applying the proportionality principle to its operations, in light of climate risk and the need to ensure an appropriate governance structure is implemented, some insurers will likely require specific expertise to be comprised at the board level, while others may rely on information and expertise provided by external resources, such as advisors or consultants. In general, the Authority will review and monitor insurers to confirm that all have taken appropriate steps to apply and integrate climate risk principles into their governance framework.

20. Insurers should establish clear roles and responsibilities for addressing climate risk issues within the board and by senior executives. While the scale and scope will vary between

organisations, the Authority expects management to develop functional collaboration across the organisation to ensure appropriate awareness of climate risk issues and the potential impact on the insurer.

21. A reporting regime shall also be adopted and implemented that is specific to climate risk within the organisation. Insurers may choose to follow existing reporting regimes; however, the reporting guidelines must include information specific to how climate risk issues are escalated from the legal entity level (in the case of insurance groups) up to senior executives and the board, similar to what is being done for other risks.

22. The board should further ensure that approaches for climate risk, in instances where it is deemed to be material, are consistent and aligned across the insurer and, in the case of insurance groups, across the members of the group. This includes implementing policies and procedures specific to climate risk into the insurer's primary activities, namely underwriting, investment management and operations.

23. The board should ensure that appropriate balance exists between managerial expertise and board members' knowledge of all relevant climate risk aspects, by means of updated policies and procedures or Terms of Reference, which ensure access to external available resources to enable the board to adequately fulfil its responsibilities. The board should be able to demonstrate that dedicated training sessions or other forms of enhancement of skills take place for its members and relevant staff.

24. As insurers develop and integrate climate risk aspects into their governance frameworks (including their key control functions), tracking climate risks within the organisations will be imperative in order to assess and monitor the effectiveness of the procedures implemented. Therefore, the Authority recommends that insurers regularly assess the effectiveness of key control functions and the appropriateness of climate risk management and reporting frameworks.

VI. RISK MANAGEMENT

25. In accordance with the Insurance Code of Conduct, insurers must establish sound and effective ERM frameworks that are proportional to their risk profile. The framework should facilitate effective and efficient operations in line with the nature, scale and complexity of the insurance business in regard to climate risk exposures.

26. The Authority is of the view that a risk appetite on climate risk needs to be adopted by insurers. Therefore, identification and assessment, risk management and monitoring, risk escalation and reporting measures will be required to be fully embedded into their ERM frameworks to manage the risk. In this regard, such measures should include appropriate considerations for material climate-related risks.

Risk Identification and Assessment

27. A materiality assessment should take place and be undertaken regularly due to the dynamic nature of the risk. Materiality considerations may take into account such measures as strategic and financial objectives, type of insurance business conducted, location of operations, etc.

28. Specific risk metrics should be developed to identify and assess the potential impact of climate-related risks arising in key risk areas. Key risk areas for physical or transition climate risk may include one or more of the following risks: insurance (underwriting), investment/market, credit, operational, reputational, strategic and legal/litigation. Risk exposure criteria should be assessed according to the nature, scale and complexity of the insurer's business.

29. The actual form of risk identification exercise could be dependent on the type of risk and the structure of the insurer, ideally through a combination of bottom-up (starting with business functions) or top-down (starting from a central function). It also may include external sources (e.g., data providers or existing frameworks for the identification of climate risk). Risks that are deemed material should be further scrutinised. Due to the transversal nature of climate risk, it is expected that it will present itself in the existing risk channels, some of which are addressed in the key areas of risk below.

30. **Insurance underwriting risk:** Insurers should assess their policyholder's climate risk exposure, as it relates to their capacity to provide coverage, as part of their underwriting risk assessment. Sectors with higher climate risk exposures should be further assessed. In relation to physical risk, more frequent and severe natural catastrophe events can result in higher claims and underwriting losses for general business insurers. Higher claims inflation could be a secondary effect. Long-term insurers are also exposed to such climate risks, which may impact morbidity, mortality and longevity risks from products offered, thus further impacting reserving assumptions. Transition risk might impact underwriting and product development mainly driven by necessary changes to overarching strategy and reputational aspects. Changes in public policy, technology and consumer preference could, for example, limit the viability of certain industries, impacting volumes and prices for associated lines of business, while opportunities might arise with respect to other or new industries. Insurers should also assess their exposures to climate-related liability risks within their underwriting activities. Individuals or entities negatively affected by the provision of services, which may be linked to the contravening of global climate objectives, may seek compensation to recover losses, leading to an increase in claims against insurers.

31. **Investment/market risk:** Insurers may be exposed to a decline in asset valuation and increased volatility in their investments as a result of changes related to a low-carbon economy. For example, investments held in carbon-intensive sectors or sectors that mismanage the transition could be affected. In addition, investments can decline in value due to physical risks, such as damage to direct investment in physical assets like real estate or declining values of investment in firms that suffer financial losses due to, for example, business interruption and physical losses. Insurers may experience a higher liquidity risk, having difficulties in liquidating assets impacted by weather events or stranded in the transition to an environmentally sustainable economy. This may also impact insurers' asset-liability

management procedures. Consideration should also be given to changes in macro-economic assumptions such as inflation, and exchange and interest rates that can be affected by climate change.

32. **Credit/counterparty risk:** Insurers may be exposed to credit risks from investments or counterparties that may be currently or potentially exposed to climate-related risks in certain lines of business or sectors. This may result in deteriorating creditworthiness or losses due to counterparty failure to meet obligations. Insurers may also be exposed to credit risks from counterparties for which climate risk has a direct impact on their assets, as well as from counterparties that engage in business with others that are exposed to climate risk. Both physical and transition risks could manifest as an adverse impact on the creditworthiness of various counterparties. Credit risk stemming from physical risk exposures can occur due to the counterparty's inability to mitigate and prevent climate change-related physical losses, the severity and frequency of those losses (due to, for example, significant exposure to climate change-impacted lines of business or sectors) or the location of operations or supply chains that can weaken their financial strength. Similarly, from a transition risk perspective, counterparties may be adversely impacted by not adequately addressing transition risk and/or not adjusting their business model with respect to transitioning to a net zero economy.

33. **Operational**: Severe, extreme weather events can disrupt business continuity by negatively impacting the insurer's infrastructure, systems, processes and staffing. Insurers may also be at risk through outsourcing arrangements, which are likely to be affected by the increase in severe weather events across geographical locations and regions. With respect to human resources, attracting the right new talent might be more challenging if the required skillsets are not considering the climate change expertise needed given this emerging field. In addition, the insurer may have a more general challenge in attracting talent if it lacks commitment in the climate change area or does not communicate its efforts appropriately.

34. **Reputational risk:** Insurers may be exposed to significant reputational risks through the insurance coverage that is provided to policyholders that carry on business activities with negative impacts on the climate or from investments held in these sectors. A negative reputation could also arise from not offering appropriate insurance products to mitigate climate risk and incentivise adaptation efforts. Not having a clear strategy to manage these risks and or lacking progress on the implementation of a comprehensive climate risk management framework can also pose a high reputational risk, impacting other risks and the views of important stakeholders, such as customers, investors and employees.

35. **Strategic risk:** Climate change may pose material challenges to an insurer's business strategy, (e.g., not achieving sustainable strategic growth or profitability objectives). Strategic risks are higher if insurers fail to align their long-term strategy with developments arising from a transition to a net zero economy, such as new evolving sectors and customers or the disappearance of other sectors over time. Strategy should also take into consideration the ability of insurers to continuously offer innovative solutions for customers, including supporting climate change adaptation and mitigation, even when physical risks increase. Special attention should also be given to other stakeholders, such as investors, which might limit sources of funding in case of strategic failure.

36. **Legal/litigation risk:** These types of risks include direct claims or lawsuits made against insurers for failing to manage climate risks, such as the management and boards of insurers not fully considering, or responding to, climate change impacts or appropriately disclosing current and future climate-related risks.

Risk Management and Monitoring

37. Effective measurement and management of risks rely on a consistently defined risk appetite, derived risk tolerance limits and effective controls. As a transversal risk, climate risk appetite and tolerances should be integrated into existing risk management frameworks but it is recommended that, in addition, overarching climate risk appetite statements are developed, particularly considering the long-term nature of the risk. Climate risk appetite metrics should be based on both pre-existing and new risk metrics, inclusive of qualitative or quantitative metrics for all risk categories. The Authority is aware that climate risk appetite metrics are still evolving in some areas. In these cases, insurers are expected to begin the process qualitatively, followed by addressing potential data gaps and adapting quantitative metrics in a further step. Insurers are also encouraged to explore longer time horizons in setting their risk appetites as expressed under Section 51.

38. Insurers, in response to such risks, should also develop policies and procedures to manage and monitor material climate-related risk exposures. Practices may include monitoring and engaging customers or assessment managers/investees that pose higher climate risk to assess their willingness to improve their risk profile. In line with risk appetite metrics, the actual operational measurement of the risk categories below may include new methodologies, internally developed or with the support of external data providers, covering qualitative and quantitative aspects:

    a. **Insurance underwriting risk**: Insurers must have underwriting tools and systems in place to monitor and assess climate risk exposures in a forward-looking manner. Depending on the type of risk, such as physical or transitional, exposures should be measured using existing or new risk metrics. Typically for property and casualty insurers, estimating the potential impact of natural catastrophes on individual policyholders, and in aggregate, is already common practice and should be supplemented by scenario analysis to capture longer-term changes. With respect to climate-related liability risk for their underwriting portfolio, insurers should estimate emerging risk exposures based on expert knowledge and forward-looking scenarios. In relation to long-term insurers, the impacts of physical risk on mortality and morbidity patterns should be monitored, supplemented by continuous monitoring of long-term trends. Where not yet developed, insurers may consider implementing the screening of customers and offering policies for certain unfavourable features with respect to transition risk. Insurers should derive risk management actions depending on risk appetite and type of risk. This could include actions such as engagement with policyholders for risk mitigation and reduction, change of policy conditions and pricing approach, or the decision to limit certain business lines or grow in others. While assessing climate risks, insurers are encouraged to consider the wider sustainability implications of underwriting certain lines of business, which may result in a revision of their underwriting strategy, risk tolerance and limits.

b. **Investment/market risk:** Insurers will also be expected to integrate climate risk considerations in their investment strategies and manage market, credit, liquidity and concentration risk exposures as a result of climate risk by implementing policies and procedures to mitigate such risks, with regular reviews to assess the effectiveness of those procedures. For example, an insurer might develop procedures to manage concentrations in the investment portfolio to certain geographic or economic sectors with higher physical and transitional climate risk exposures. Insurers should assess the impact of climate risk on individual investments and portfolios regularly, using various internal metrics and/or external indicators as appropriate in order to align with the insurer's investment strategy. There should be processes and systems in place to manage, monitor and assess the risk of potentially stranded assets. Risk management actions could include, for example, engagement with investment managers or investees to reduce risk over time, limiting exposures or immediate or gradual divestment in case these are not in line with risk appetite. Insurers should also have in place active monitoring of macro-economic impacts from climate change, particularly interest rate and inflation risk exposures and robust asset-liability matching policies and procedures.

c. **Credit/counterparty risk:** Insurers will be monitored by the Authority to ascertain whether they have assessed credit risk as well as counterparty risk exposures in relation to climate risks, including both affiliated and unaffiliated relationships and the impact on their statutory capital and surplus. Therefore, insurers should begin (and continue) monitoring the largest counterparty exposures and work alongside such parties to ensure that exposures are reduced and in line with risk appetite. This should include (but not be limited to) a review of the existing investment portfolio and reinsurance programme. The quality of the major reinsurers (e.g., by credit rating or balance sheet strength) should also be assessed. An evaluation of risk mitigation techniques for climate risk exposures should be explored and may include additional reinsurance coverage, advanced analytics, alternative risk transfer with respect to reinsurance and investments applying limits or reducing exposure to certain entities. In some instances, insurers may consider engaging, via their investment manager, with certain entities to assess plans and the track record in preparing to adapt to climate change or transition. Policies and procedures should be adopted to monitor counterparty risks and to manage the impact on the insurance business. Enhanced due diligence for higher risks should also be implemented, such as the use of external ratings, counterparty reporting etc.

d. **Operational risk:** A proactive approach to operational risk management should be taken to manage climate risk exposures. In this regard, insurers should have a business continuity management plan in place that expressly addresses all climate change risks, such as potential physical damages to premises and the vulnerability of services and supply chain. Where insurers rely on outsourced functions, they will be assessed by the Authority to ensure that monitoring and control procedures are in place to mitigate any exposures or failures of the outsourced party. In addition, the climate risk skillset and expertise needed for all relevant functions should be assessed and integrated into the human resource and talent management approach. Insurers may consider utilising publicly available and proprietary source data; or seek assistance from external experts,

if required, to better understand the possible impacts of climate change on their operations.

e. **Reputational risk**: Reputational risk regarding climate risk exposure should be assessed and monitored on an ongoing basis. Insurers should mitigate this risk by implementing a clear climate-related strategy, including concrete targets. This should be representative of a comprehensive approach to managing climate risk in all risk categories and a demonstration of continuous progress. Insurers should develop an appropriate strategy for communication and disclosure around their approach to the management of climate risk.

f. **Strategic risk:** Insurers should assess the suitability of the current business strategy, the inherent strategic risk, respective risk appetite and risk limits on an ongoing basis. Strategic objectives should be reviewed regularly, considering the dynamic development around the risks stemming from the transition to a net zero economy and the increasing physical risks. Climate risk data and metrics should be regularly updated to support decision-making by the board and senior management. Successful strategic risk management for climate risk considers all stakeholders, such as customers, investors, employees and regulators and should be addressed by transversal action plans for relevant functions.

g. **Legal and litigation risk:** This risk should be assessed considering all stakeholders. Mitigation aspects should include developing a comprehensive approach to managing climate risk, considering all mentioned risk categories and the explicit integration of climate risk in the strategy setting and insurer's governance framework, particularly considering the responsibility of board and control functions and appropriate disclosure.

h. **Scenario analysis and stress testing:** Insurers should adopt a comprehensive scenario analysis approach to capture the nature of climate risk in their prospective solvency position. Scenario analysis informs about exposures and vulnerabilities along certain scenarios and delivers input in strategic planning. Short-term and mid to long-term impacts of scenarios should be analysed, which should include the assessment of physical and transition risks across a range of climate-related scenarios.

i. Insurers should ensure adequate resource planning and ongoing training to equip staff with the relevant tools and expertise to identify, assess, monitor and report climate risks in a timely manner.

Risk escalation and reporting

39. In the instance of material climate risk exposures, the Authority expects insurers to follow the same escalation procedures that apply to all risks facing them. In instances where climate risk-related escalation procedures vary from existing escalation policies and procedures, these differences should be outlined along with the reasoning behind them. Furthermore, the procedures of regularly reporting relevant information on material climate risk exposures to the board and senior management for review and decision-making should include the results of scenario analyses, monitoring and mitigating actions consistent with the insurer's risk appetite and overall risk management framework.

40. The extent and frequency of reporting should be commensurate with the nature and magnitude of the insurer's risk exposure and clearly reflected.

Control functions

41. While the successful management of climate risk is the shared responsibility of all control and business functions, insurers should have a dedicated senior executive, typically a control function holder, who is tasked with ensuring consistent overarching climate risk management policy implementation. Further, employees appointed in control function roles should have sufficient knowledge and be fit and proper to fulfil such roles, having the adequate experience to understand climate-related issues relative to their specific responsibilities. Additionally, insurers should ensure that such persons are regularly trained and individually assessed to ensure they continue to be appropriate to fulfil the role. The following control functions should be considered in the climate risk management process.

42. **Risk management function**: The risk management function has a key role in integrating climate risk in the existing risk management framework, such as setting policies and procedures aligned with risk appetite, developing tools and metrics, and ensuring comprehensive risk reporting. Both qualitative and quantitative metrics should be in place to support and monitor the progress that is aligned with the risk appetite statements and business strategy as approved by the board. Risk metrics used for reporting to the board and senior management and metrics for operational monitoring should be closely aligned. The risk function should collaborate strongly with relevant business functions, such as investment and underwriting. The available metrics that the risk function might use for risk monitoring are broad and could range from overarching metrics to track progress towards the strategic climate ambitions to modelling outputs for natural catastrophe exposures. In relation to transition risk, such measures may include monitoring investment exposures with high transition risk compared to investment limits or an aggregated view of scoring customers and sectors. The risk function should lead or contribute to scenario analysis exercises, from the conception and conduction to reporting.

43. **Compliance function:** The compliance function ensures that appropriate measures are in place to avoid legal issues or breaches of regulatory requirements or standards, codes of conduct, charters, internal policies or other directives that the insurer has committed to in regard to managing exposures to climate risk. The compliance function ensures that internal policies and controls concerning climate risk are compliant and remain relevant in line with changes in standards, regulations, etc., to avoid legal implications and reputational risks. The function is also responsible for ensuring compliance of climate risk disclosures with respective requirements (e.g., disclosures incorporated in annual returns, and publication on the website).

44. **Actuarial function:** The actuarial function is an important function in the valuation of assets and liabilities potentially impacted by climate risk in meeting policyholder obligations. The actuarial function plays a critical part in the development of the Asset Liability Management (ALM) framework and in the calculation of policyholder liabilities and capital requirements. Some physical risks may increase over time and are to be considered as they impact underwriting and reserving. For life insurers, these include mortality and morbidity. For non-life insurers, these include mainly primary perils like hail, hurricanes and storm patterns, drought, wildfires and flooding but may also affect secondary perils such as business interruption, credit insurance, and accident and health. In addition, consideration should be given to other secondary impacts of climate change, for example, on the macro-economy (e.g.,

inflation and expenses or the frequency or type of pandemics). Although pricing and reserving may be calculated using historical information, climate risk is a forward-looking event where exposure may not be precisely determined. Therefore, the quality and completeness of the underlying data should be carefully considered by the actuarial function in these processes. The actuarial function should assist the risk management function in the execution of the risk management framework, particularly in the modelling of climate-related events and in climate scenario analysis exercises. The actuarial function should also ensure that new models are used, and existing models evolve in line with the advancement of methods to measure the impact of climate change.

45. **Internal audit function**: The internal audit function should assess the adequacy and effectiveness of the risk management process. This review should determine if all material climate risks were assessed and whether the internal processes and controls are robust, making recommendations where deficiencies are identified.

VII. Commercial Insurer's Solvency Self-Assessment (CISSA)

46. The CISSA is a statutory obligation and a useful tool for insurers to assess the adequacy of their capital position and management of material risk exposures. As such, the Authority expects insurers to consider the impact of climate-related risks and how they are managed within their CISSA.

47. Insurers should also evaluate the risk associated with climate change and set out specific risk management procedures proportionate to their operations. Therefore, the Authority expects insurers to set out the details of their risk management procedures within the CISSA in accordance with the risk management section of this guidance. Insurers should also consider governance and how this aspect may be enhanced by climate change, as the Authority views policyholder protection as a key component when considering whether an insurer is conducting its business prudently.

CISSA Governance

48. An insurer should describe within its CISSA a summary of the governance structure implemented to oversee its climate change strategy and risk management and identify all responsible personnel and their roles in implementing its climate change strategy. Insurers will also be expected to demonstrate how climate risk management is implemented at each level of the organisation, including board/board committees, management committees and control and business functions. Further, this should include reporting channels from functional units up to the board level. Where the insurer relies on group or third-party resources to aid in executing its climate change strategy, the extent of these services should be detailed. The board should evaluate its strategy with respect to climate change regularly and highlight any fundamental changes that take place. Further detailed within the CISSA should be the evaluation process and the frequency of the review of such process undertaken.

CISSA Risk Management

49. The CISSA should expressly address how climate risk is managed from an overarching perspective and how its transversal nature is reflected in the existing risk areas. It should clearly define the risks and opportunities associated with climate change as it pertains to the insurer's

operations. This view should be forward-looking and continuously evaluated for appropriateness taking into account the current environment and future scenarios.

50. The insurer should set out in the CISSA its risk appetite, risk tolerance and limits on climate risk, and its alignment with overall strategy and ambition concerning climate risk.

51. The CISSA shall discuss the short, medium and emerging long-term risks associated with climate change and its impact on the finances and solvency of the insurer. Short-term (one to five-year horizon) considerations should be robustly discussed, for example, in light of transition risks, as these may have a more immediate effect on the insurer's risk appetite, profile and operations. Also, understanding that certain climate-related risks will materialise over a longer period, insurers should utilise scenarios with a mid-term (five to ten-year horizon), while scenarios for a longer time horizon (ten years and onward) should be utilised if justified by the nature and risk profile of the business (e.g., considering the duration of assets and liabilities). It is very important that all relevant climate risks are reviewed and assessed based on a comprehensive materiality assessment, which should be clearly outlined in the CISSA.

52. As data and standards further develop regarding climate risk, the details of the CISSA are expected to be informed by scientifically sound and up-to-date information as part of the quantitative and qualitative determinations and discussions. The CISSA should further include the discussion of concrete climate risk gaps and the implementation of climate risk management action plans to overcome these gaps.

53. The CISSA should include details of risk identification, monitoring and mitigating process for climate risk deployed by the insurer. The CISSA shall include appropriate scenarios and stress tests that help identify and quantify the impact of climate risk. Where such risks are identified as material, the insurer should describe the actions used to mitigate such risks effectively. Monitoring climate risk should be an ongoing process, and the CISSA should describe this process in detail.

54. The CISSA shall detail how the insurer monitors exposure related to policyholders, asset managers, business partners, and considerations of direct and indirect climate impact.

Scenario Analysis of Climate Risk

55. The Authority recognises that developing climate scenario approaches is complex and methodologies are evolving. The Authority will consider the proportionality and risk profile of the insurer. It does not expect immediate, annual comprehensive exercises from all insurers but rather a commencement, e.g., starting with a qualitative assessment and an exposure analysis and then showing clear progress over time. As limitations may exist in the availability of information and the systems/tools that would permit the implementation of integrated approaches, particularly for longer-term scenarios, the expectation is for insurers to gradually integrate them into their approach for risk management purposes, considering the insurer's risk profile and business horizon.

56. The Authority expects insurers to incorporate an analysis of select climate risk scenarios to assess their ability to manage material exposures. The selected scenarios should consider

different time horizons and should be qualitative and, over time and as appropriate, also quantitative in nature. Exercises with shorter timelines, typically up to five years, act as a stress test on the insurer's capital, highlighting the point at which the solvency position is impacted. The outcome of exercises with mid or longer-term time horizons (i.e., one or various decades) inform the setting of a sustainable business strategy and support the identification of emerging risks. Further, the scenarios should include a sensitivity analysis, highlighting how relevant climate shocks impact risk exposures, financial position, strategy and operations of the insurer. Where relevant, insightful independent scenarios should be considered. In instances where climate risk is deemed not to be material, the insurer should still discuss the climate risk identification, exposure and monitoring that it has in place without the need to conduct scenario analysis.

57. Scenarios should ultimately cover all material physical risks and transitional risks stemming from climate change. For example, physical risk could include modelling scenarios demonstrating severe events driven by climate-related factors. Transitional risk could include future shock scenarios demonstrating the insurer's sensitivity to various economic and financial market responses to climate-related trends (e.g., trends toward a low carbon economy, carbon tariffs/tax, and market pricing for oil and gas). Although isolated scenario analysis focusing just on physical, or just on transition risk, can be a starting point, an integrated approach is preferred due to the interlinked nature of the risks. An integrated approach typically combines different degrees of physical risk that are driven by an increase in global temperature and the different transition pathways to a low carbon economy, for example, in an orderly and disorderly fashion. Scenario analysis should be based on scientifically sound, relevant and up-to-date information. Particularly, mid and long-term analyses should demonstrate outcomes with and without management action.

58. The insurer should describe in the CISSA why the selected scenarios represent relevant climate risk exposure in relation to its business. In general, insurers should use a base scenario as well as extreme scenarios, such as an unorderly transition or no transition at all. In addition, the process and procedures that are used should be summarised and referenced in order to identify the selected scenarios. Lastly, all assumptions and methodologies should be included within the description of the selection of scenarios.

59. Insurers should proactively develop expertise in material areas of climate risk that incorporate scenario analysis. That includes building up internal skills, tapping into external knowledge, participating in scenario exercises driven by regulators and international standard-setters, developing their own internal scenario approaches, and using and developing enhanced modelling tools.