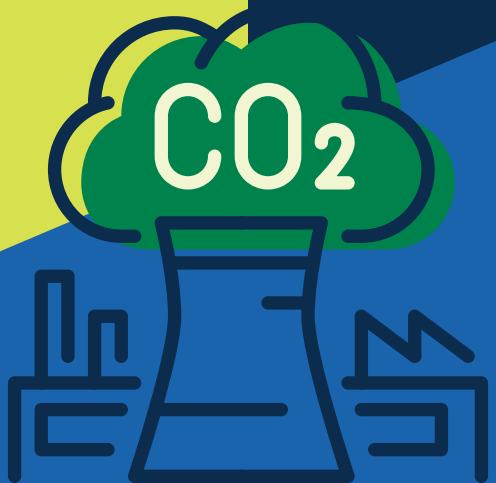
Sustainable Insurance Forum

Integration of **Climate-related Risks** within Insurance Supervisory Frameworks



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About the Report

This is a United Nations Development Programme's (UNDP) Sustainable Insurance Forum (SIF) paper.

This paper seeks to explore the extent to which climate-related risks are being considered in insurance supervisory frameworks. Furthermore, it delves into the challenges in this area, which may inspire future priority lines of action for SIF in 2024 and beyond. Overseen by SIF's Capital and Supervisory Frameworks Working Group (CSWG), chaired by Rachel Ong (from Monetary Authority of Singapore), and with input provided by UNDP's SIF members, this paper has been developed by the SIF Secretariat, specifically Dipanjan Basu (Policy Researcher) and Florencia Baldi (SIF Strategic Manager), and edited by Ayesha Babar (Head of Strategic Coordination and Communications). The Secretariat is grateful to the experts involved and to all contributors from institutional partners, especially the CSWG members: Office of the Superintendent of Financial Institutions (OSFI, Canada), Autorité de contrôle prudentiel et de résolution (ACPR, France), the International Association of Insurance Supervisors (IAIS), the Monetary Authority of Singapore (MAS, Singapore), South Africa Reserve Bank (South Africa), and Swiss Financial Market Supervisory Authority (FINMA, Switzerland).

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Comments are welcome and can be sent to: sif.secretariat@undp.org

About SIF

Established by the UN with the support of the IAIS in December 2016, UNDP's SIF is a global network of 38 insurance supervisors and regulators, overseeing 92 percent of the global insurance market. This collaborative network aims to address sustainability and climate change issues impacting insurance companies and markets, and policyholders in their jurisdictions. The SIF Secretariat is hosted by the UNDP. The work of SIF is supported by the Irish Government.

For more information, please visit www.sustainableinsuranceforum.org

Executive Summary

The **Integration of climate-related risks within insurance supervisory frameworks** report highlights the latest conceptual thinking and practices of insurance supervisors on integration of climate considerations in insurance supervisory frameworks. Between late 2023 to early 2024, the SIF Secretariat conducted a survey amongst the SIF members, as a follow-up to its work in 2022-23. The survey received responses from 30 SIF members, representing 79% of SIF's members.

This latest survey delves deeper into different usage and aspects of supervisory frameworks that consider climate-related risks in assessing an insurer's overall risk profile, namely:

- Governance requirements
- Own Risk and Solvency Assessment (ORSA) practices
- Capital add-ons
- Macroprudential policies

In addition, the report highlights current prioritisation by regulators and supervisors and the progress in integrating climate-related risks within insurance supervisory frameworks. It also offers insights into existing international efforts in this area.

Participating SIF members provided views on a range of issues, including but not limited to:

1. More than **80%** of respondents have incorporated in their supervisory expectations the need for insurers to **have climate-related risk management policies**. Four of the remaining five respondents are developing guidelines or updating existing ones to incorporate this expectation.

2. While no respondent expects insurers to have a function dedicated exclusively to the management of climate-related risks, about **40%** expect insurers to **designate one or more existing board or senior management members or committees and/or certain key function(s) to oversee and manage climate-related risks.** For the remaining **60%**, reasons cited for not requiring a dedicated function include insurers having diverse risk profiles of which climate may or may not be a material risk, and insurers not being expected to have functions dedicated to managing individual types of risks, including climate ones.

3. **60%** of respondents have observed that **climate scenario analysis** or climate stress testing are being considered in insurers' ORSAs or other similar requirements. Some respondents have set expectations for climate scenario analysis to be used in insurers' ORSAs, while others have not set such expectations, but nonetheless observed a good number of insurers in their jurisdictions doing so. The remaining **40%** have not yet conducted such a review within their jurisdictions.

4. While **87%** of respondents have observed **physical and transition risks** being considered by insurers in climate scenario analysis, only **40%** have observed **litigation risks** being considered, and mostly in a limited manner or in a small number of insurers only. Respondents

have explained that this could be due to litigation risk being nascent and difficult to assess in terms of stress testing and scenario analysis.

5. **Almost half of the respondents** observed that insurers in their jurisdictions consider **forward-looking elements** in climate scenario analysis or stress testing, taking into account increased frequency and severity of stress events. For these supervisors, trending scenarios have been observed both explicitly in accordance with guidelines or regulatory requirements, or implicitly where some insurers selectively utilize climate scenario analysis for short-and-medium-term strategic decisions. Several respondents explained that it is still early in the process for insurers to consider them.

6. Insurers have been observed to assess the **materiality of climate-related risks** in various ways. In some cases, materiality assessments have been guided by the supervisor while in other cases, they are based on a combination of qualitative and quantitative elements, as well as by looking at both sides of the balance sheet. Other respondents have observed that the materiality of climate-related risks are being assessed in the same way as any other risk type.

7. **70%** of respondents have considered an **insurer's ORSA in their supervisory assessment of the insurer's climate-related risks**. For most of the respondents, the scenarios and outcomes of insurers' ORSAs form part of the supervisory risk assessments of individual insurers. Several respondents have also performed thematic reviews of their insurers' ORSAs, typically to evaluate how insurers are meeting their expectations on climate-related risks.

8. **80%** of respondents said their jurisdictions currently allow for **capital add-ons** to be incorporated as a microprudential tool to address any risk capture inadequacy or risk management deficiencies. None of the respondents has explicitly made provisions for climate-related risks, with most of them considering their current frameworks broad enough to accommodate such risks. Respondents also highlighted several challenges in having a capital add-on framework that caters explicitly to climate-related risks, or to impose a capital add-on for climate-related risks.

9. **No respondent has developed or considered developing any macroprudential policies or tools besides ORSA** to assess climate risk, or introduced tools like a systemic capital buffer to prevailing regulatory capital requirements. One of the key reasons is the lack of empirical climate-related data and attribution methodologies.

10. Apart from issuing guidelines and setting supervisory expectations, **respondents have provided suggestions that can help advance climate-related analysis and assessments**. These include strengthening data availability, collection and analysis, sharing of best practices, further and targeted research on the impact of climate-related risks, capacity building, as well as regular key stakeholder engagement.

Background

2023 was the warmest year since global records began in 1850[1] while January 2024 has been confirmed to be the hottest January in history[2], with average global temperatures of 1.66°C above pre-industrial levels. The world is witnessing more frequent extreme climate events including wildfire, storms and floods with increasing intensity and frequency. Meanwhile, low-income countries are disproportionately being affected[3] by the worst adverse impacts of climate change, despite them contributing the least to current climate change[4]. The United Nations Intergovernmental Panel on Climate Change (UN IPCC) has stated that almost half of the world's population (approximately 3.3-3.6 billion people) 'live in contexts that are highly vulnerable to climate change' and strongly advocated that greenhouse gas emissions must peak by 2025[5] for a chance to meet the 1.5°C target of the Paris Agreement[6].

For the insurance sector, climate change poses physical, transition as well as legal and reputational risks, with the potential to affect both sides of the balance sheet. With global aggregate premiums across life and non-life insurance close to US$6.8 trillion[7] and over US$36 trillion in global assets under management[8], the failure to consider climate-related risks in their business strategies, investments, product pricing, underwriting and other aspects could have significant consequences for insurers. **This has led insurance regulators and supervisors to consider developing or modifying existing capital and supervisory frameworks to recognise and account for the climate-related risks faced by insurers, both qualitatively and quantitatively**.

The IAIS has been focusing on promoting a globally consistent supervisory response to climate change and providing supervisors with the necessary tools to monitor, assess and address climate-related risks to the insurance sector. In the recent past, together with SIF, IAIS has published several papers:

- May 2021: Application Paper on the Supervision of Climate-related Risks in the Insurance Sector[9]
- February 2020: Issues Paper on the Implementation of the Recommendations of the FSB Taskforce on Climate-related Financial Disclosures (TCFD)[10]
- July 2018: Issues Paper on Climate Change Risks to the Insurance Sector[11]

1 https://www.noaa.gov/news/2023-was-worlds-warmest-year-on-record-by-far

2 https://climate.copernicus.eu/copernicus-2024-world-experienced-warmest-january-record For the first time since records began, the world's average temperatures have been higher than the 1.5°C global warming limit for 12 months in a row.

3 https://www.weforum.org/agenda/2023/01/climate-crisis-poor-davos2023/

4 https://www.worldbank.org/en/news/feature/2015/11/08/rapid-climate-informed-development-needed-to-keep-climate-change-from-pushing-more-than-100-million-people-into-poverty-by-2030 The World Bank reports that only one-tenth of the world's greenhouse gases are emitted by 74 lowest income countries, but they will be most affected by the effects of climate change.

5 https://www.ipcc.ch/report/sixth-assessment-report-cycle/

6 https://unfccc.int/process-and-meetings/the-paris-agreement

7 https://www.swissre.com/institute/research/sigma-research/sigma-2023-03.html

8 https://www.unepfi.org/industries/insurance/insuring-the-climate-transition/

9 https://www.iaisweb.org/uploads/2022/01/210525-Application-Paper-on-the-Supervision-of-Climate-related-Risks-in-the-Insurance-Sector.pdf

10 https://www.iaisweb.org/uploads/2022/01/200227-Issues-Paper-on-the-Implementation-of-the-TCFD-Recommendations.pdf

11 https://www.iaisweb.org/uploads/2022/01/180409-Issues-Paper-Climate-Change-Risks-Publ-Backgr-Session-SIF.pdf

Recognising the relevance of the subject, SIF undertook a high-level survey with 31 supervisory authorities in 2022 (SIF Survey 2022) to understand whether insurance regulatory capital frameworks were capturing climate-related risks. It found that while the institutional mandates of supervisors generally did not explicitly mention climate risk as an axis for supervision, most SIF respondents reported to be considering this risk in wider financial stability and policyholder protection objectives. Just about half of respondents to the SIF Survey 2022 were considering climate-related risks within their capital frameworks. Climate-related risks were either considered under standard quantitative requirements (i.e. Pillar 1), ORSAs or capital add-ons. 35% of members reported considering climate-related risks within standard quantitative requirements (under Pillar 1), while 42% reported integrating these risks within their supervisory frameworks, primarily in governance requirements (Pillar 2).

Also, respondents to the SIF Survey 2022 agreed that the most important challenges hindering the integration of climate risk considerations within their supervisory and capital frameworks were:

- **Access to quality data** to develop prudential frameworks that adequately consider sustainability risks and supervise financial institutions accordingly.
- **Lack of knowledge and expertise** both on the side of the insurers and the supervisors (e.g. constructing and implementing theoretical climate scenarios, understanding the science and the potential outcomes and the broader economic effects, among others).
- **Underdeveloped metrics and tools** (e.g. to develop estimates for losses with the necessary certainty when the impact is expected to be very material).

Building on this 2022 high-level stock-take, as agreed in SIF's working session in Seattle in June 2023, the **Capital and Supervisory Frameworks Working Group (CSWG)** was established to further lead discussions and work on climate-related risks within capital and supervisory frameworks in the insurance sector. The CSWG agreed on the need to develop greater insights into supervisors' approaches, rationale, and future efforts to integrate climate considerations within capital and supervisory frameworks. A new SIF survey (hereafter referred to as 'CSWG I Survey, 2024') was conducted between late 2023 and early 2024 among 30 SIF members[12] to gather information on supervisors' current thinking on the integration of climate-related risks within Pillar 2 components of insurance supervisory frameworks, the approaches they have taken or will be taking, and the challenges faced when doing so. The survey response represents 79% of SIF members. These jurisdictions represent about 32% of global GDP[13].

The results of the CSWG I Survey, 2024 form the basis of this paper. The report is divided into five sections. It sets out the main findings from the CSWG I Survey, 2024, outlining existing practices of insurance supervisors in their jurisdictions.

12 NAIC represents 8 members: California Department of Insurance, Connecticut Insurance Department, New York State Department of Financial Services, Department of Financial Regulation (Vermont), Illinois Department of Insurance, Maryland Insurance Administration, Massachusetts Division of Insurance and Washington State Office of the Insurance Commissioner. NAIC itself was excluded from calculations to avoid double counting.

13 Computed by author based on data from the World Bank and U.S. Bureau of Economic Analysis.

Section I

Governance Requirements

Governance Requirements

The regulatory landscape dedicated to managing climate-related risks is evolving. This is evident from the supervisory expectations being outlined and climate scenario analyses that are being conducted globally to address climate-related issues effectively.

Expectations for insurers to have climate-related risk management policies

The CSWG I Survey, 2024 found that **83% (25 respondents) have incorporated the need for insurers to have climate-related risk management policies in their supervisory expectations.** Out of the remaining five respondents, four are in the process of developing such requirements or updating existing requirements to incorporate this expectation, while one respondent has yet to consider doing so.

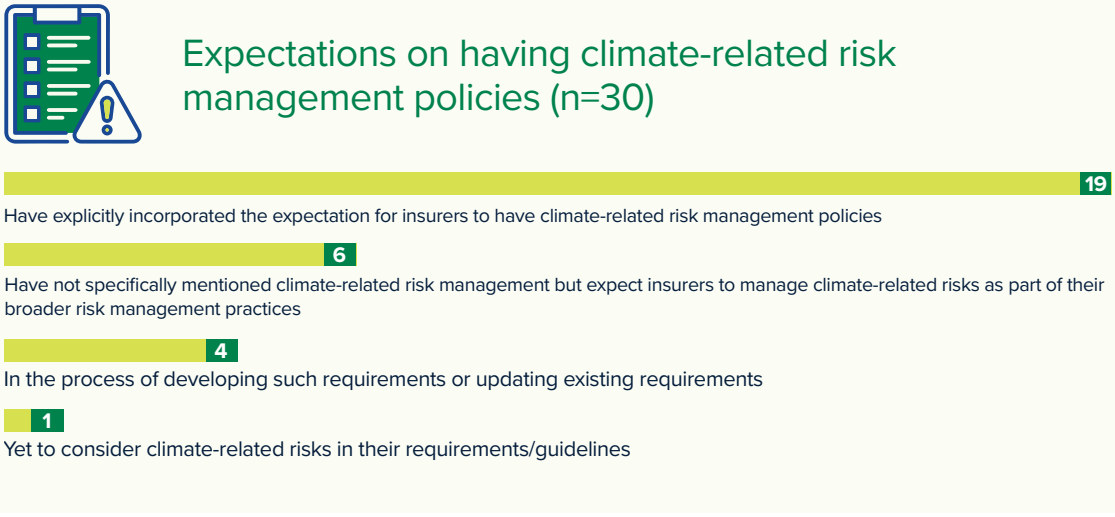

Figure 1. Expectations for insurers to have climate-related risk management policies [Source: CSWG I Survey, 2024]

19 respondents have explicitly incorporated the expectation for insurers to have climate-related risk management policies. One respondent stated that it has set supervisory expectations that insurers should devote sufficient and skilled resources within the organization to allow for proper management of the challenges posed by climate-related risks. A respondent also noted that organizations should establish clearly defined tasks and responsibilities with respect to climate-related risks. Another respondent stated that it has set out supervisory expectations around effective governance, robust risk management, and meaningful disclosure of environmental-related risks.

Six respondents have not specifically set requirements for insurers on climate-related risk management policies, but expect insurers to manage climate-related risks as part of their broader risk management practices. For example, for one respondent, two main policies govern sustainability risks (which include climate risks): (a) sustainability policy, which aims to ensure that sustainability aspects, including risks and opportunities, are considered in the conduct of business and in

relationships with interested parties and (b) risk management policy, which provides guidelines for risk management itself. Another respondent stated they have no explicit requirement for insurers to have climate-related risk management policies, but to have risk management policies in place for all risk classes which are relevant for the insurer.

The CSWG I Survey, 2024 highlighted some of the **challenges being faced by supervisors** in incorporating in requirements or guidelines their supervisory expectations for insurers to have climate-related risk management policies. One of the challenges is the significant differences in level of advancement among insurers in the management of climate-related risks, with larger insurers and insurance groups leading in this space. The limitations in industry talent and expertise means that at least one respondent has had to provide more time to the industry to make progress in this area. This challenge is also internal – authorities themselves are also having to provide internal training and tools to enable supervisors to review insurers' risk management practices and assess if insurers are on track to meet their expectations.

Case Study 1:

A spotlight on supervisory expectations on insurers related to climate-related risks

The UK **Prudential Regulation Authority** (PRA) of the Bank of England issued Supervisory Statement 3/19[14] (SS3/19) in 2019, which sets out its expectations for how banks, building societies, and insurers should manage the financial risks from climate change. Since the completion of the Climate Biennial Exploratory Scenario (CBES)[15] exercise in 2022, PRA's focus has been on the supervision of firms against SS3/19 and the 2022 Dear CEO Letter[16]. In January 2024, the PRA outlined its current supervisory expectations in its Insurance Priorities Letter[17] in the context of what it called a 'challenging environment which brings with it both risks and opportunities for the insurance sector'. The letter is a follow-up to PRA's 2023 letter[18] and highlights that it expects all firms to be able to demonstrate how they are responding to its expectations on climate and to set out the steps they are taking to address barriers to progress, recognising that each firm's approach should be proportionate to the nature, scale, and complexity of their business. In 2024, the PRA was set to update SS3/19 which will include, among other things, identified effective practices and developments in wider regulatory thinking.

14 https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2019/ss319

15 https://www.bankofengland.co.uk/stress-testing/2021/key-elements-2021-biennial-exploratory-scenario-financial-risks-climate-change

16 https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2022/october/managing-climate-related-financial-risks.pdf

17 https://www.bankofengland.co.uk/prudential-regulation/letter/2024/insurance-supervision-2024-priorities

18 Letter from Charlotte Gerken and Shoib Khan 'Insurance Supervision: 2023 priorities'; available at: https://www.bankofengland.co.uk/prudential-regulation/letter/2023/insurance-supervision-2023-priorities

The **Monetary Authority of Singapore** (MAS) issued the Guidelines on Environmental Risk Management for Insurers (EnRM Guidelines)[19] in 2020 and an Information Paper on EnRM (Insurers) (Info Paper)[20] in 2022. The EnRM Guidelines set out MAS' expectations on environmental risk management for all insurers while the Info Paper provides an overview of the progress made in implementing the EnRM Guidelines and highlights emerging and/or good practices by financial institutions and identifies areas where further work is needed. The EnRM Guidelines cover MAS' regulatory and supervisory approach to governance and strategy, risk management, underwriting, investment and disclosure of environmental risk information. MAS Notice 126 (Enterprise Risk Management (ERM) for Insurers)[21] requires insurers to perform an ORSA – at a minimum, annually – to assess the adequacy of its risk management, including environmental risk, and the ORSA must be designed such that it will encompass all reasonably foreseeable and relevant material risks.

The **Connecticut Department of Insurance's** Bulletin FS-44[22], 'Guidance for Connecticut Domestic Insurers on Managing the Financial Risks for Climate Change' expects insurers to manage climate-related risks in a manner proportional to the nature, scale, and complexity of the insurer's business.

The **Central Bank of the UAE** also expects the (re)insurance sector to incorporate climate-related risks. Pertinent to the Solvency Margin and Minimum Guarantee Fund (MGF), the Financial Regulations for Insurance Companies and Takaful companies[23] specify that companies shall have in place documented risk management framework and strategy and risk management policies and procedures, wherein the risk management includes climate change risks that can impact both the asset and liability side of the companies' balance sheet, profit and loss account, cash flows, earning capacity, profitability, ability to continue as a going concern, reputation and intellectual and technological capital.

In the U.S, as a follow-up to its work on the 2021 Climate Risk Disclosure Survey[24] ('survey'), the **National Association of Insurance Commissioners** (NAIC), in 2023, added specific references to the survey results into both the NAIC's Financial Analysis Handbook[25] and the NAIC's Financial Condition Examiners Handbook[26] encouraging the results of the survey to be utilized in ongoing solvency monitoring of insurers (offsite and on-site). Regulators are encouraged to use the surveys to assist in risk identification and assessment, and they are also encouraged to review the accuracy of information reported in the survey. These procedures were added along with a wide range of additional procedures and tools related to identifying, assessing and testing an insurer's exposure to catastrophe/climate risks.

19 https://www.mas.gov.sg/regulation/guidelines/guidelines-on-environmental-risk-management-for-insurers

20 https://www.mas.gov.sg/-/media/mas-media-library/publications/monographs-or-information-paper/bd/2022/information-paper-on-environmental-risk-management-insurers.pdf

21 https://www.mas.gov.sg/regulation/notices/notice-126

22 https://portal.ct.gov/-/media/cid/1_bulletins/bulletin-fs-44.pdf

23 https://rulebook.centralbank.ae/en/rulebook/insurance-authority-board-decision-number-25-2014-pertinent-financial-regulations

24 https://www.insurance.ca.gov/0250-insurers/0300-insurers/0100-applications/ClimateSurvey/

25 https://www.in.gov/idoi/files/Financial-Analysis-Hanbook-2020.pdf

26 https://www.in.gov/idoi/files/2023-Financial-Condition-Examiners-Handbook.pdf

For the Dutch Central Bank, **De Nederlandsche Bank** (DNB), climate-related risks have been part of its fit and proper assessments for proposed management or supervisory board members since 2021. DNB expects a management or supervisory board member or other policymaker or co-policymaker, with respect to climate-related and environmental risks[27], to:

- be able to define these risks
- be aware of relevant laws and regulations and of reporting obligations
- be able to identify, monitor and manage them
- know who is responsible for managing them in the institution
- understand their impact within the institution's specific context, and to be able to cite examples
- be able to formulate a strategy and policies to tackle them
- take responsibility for ensuring their adequate management
- in the case of supervisory board members: to monitor their adequate management
- have sufficient relevant competencies, such as a helicopter view, leadership, autonomy, sensitivity to their environment, strategic guidance and sense of responsibility.

DNB also expects financial institutions to understand and manage all material risks, including climate-related and environmental risks. In March 2023 DNB published a Guide[28] following up on the recommendation of the NGFS to draw up 'supervisory expectations'. This Guide includes cross sectoral focus points as well as sector-specific guidance (for insurers, pension funds, investment firms and institutions, and electronic money and payment institutions). Further, it incorporates good practices for insurers in areas such as business model and strategy, governance, risk management and information provision.

In 2021 and 2022, the French regulator, **Autorité de Contrôle Prudentiel et de Résolution** (ACPR) conducted a number of on-site inspections of insurers focusing on how climate risks were integrated in their risk management framework and on the publication of the first LEC 29 reports (Law no. 2019-1147, known as the (French) Energy and Climate Law which entered into force in 2022). In 2021, the on-site inspections highlighted shortcomings, notably the lack of provisioning measures to plan ahead the effects of climate change since some insurers considered that such effects would only be seen on future contracts. Moreover, before the analysis of climate risks within the ORSA report was made mandatory in 2022, this report appeared to be quite incomplete in terms of quantitative impacts.

27 https://www.dnb.nl/en/sector-information/open-book-supervision/open-book-supervision-themes/fit-and-proper-assessments/initial-assessment/climate-related-risks-are-now-a-part-of-fit-and-proper-assessments/

28 https://www.dnb.nl/media/devh2uet/76226_dnb_ia_klimaat-en-milieurisico-s-sectoren-2023_eng_web.pdf

The ACPR's climate stress tests also provided insurers with an opportunity to start thinking about that matter. In 2022, the ACPR conducted on-site inspections dedicated to the implementation of the new LEC29 Act, and more specifically to the assessment of the LEC29 reports. It was noticed that information was either missing or insufficient (for instance regarding the scope of commitments, the objectives of operational arrangements), and that only the long-term objectives of the Paris Agreement were detailed (no targets by 2030). Besides, the processes for identifying, assessing, prioritizing and managing environmental, social and governance risks were not properly described in the LEC29 reports[29].

Bermuda Monetary Authority (BMA) has issued a guidance note[30] outlining its expectations for commercial insurers regarding the management of climate-related risks. The guidance focuses on corporate governance and risk management practices for climate risk, with the aim of ensuring the financial soundness and ongoing viability of the insurance sector. BMA's expectations are based on the principle of proportionality, with the application dependent on the nature, scale, complexity, and risk profile of the insurer's business including a materiality assessment. Insurers are expected to implement a comprehensive risk management approach for climate change risk mitigation and adaptation. The guidance note covers various aspects, including corporate governance (roles and responsibilities of the board and senior executives, expertise, reporting, integration of climate risk in policies and procedures), risk management (ERM framework, risk assessment, metrics, monitoring, training, and roles of various functions) and ORSA reporting (assessment of status, action plan, analysis of climate risk scenarios).

Key function dedicated to climate-related risks

The CSWG I Survey, 2024 further asked if supervisors had the expectation that insurers have a key function dedicated to the management of climate-related risks. While none of the respondents expect insurers to have a key function dedicated exclusively to climate-related risks, **40% of respondents expect insurers to designate one or more existing members of their board and/or senior management, or certain key functions, to the management of climate-related risks. This is typically set out in guidelines rather than a regulatory requirement.**

29 https://acpr.banque-france.fr/sites/default/files/medias/documents/20240122_as_bilan_29lec_2023.pdf

30 https://www.bma.bm/viewPDF/documents/2023-03-09-17-03-42-Guidance-Note---Insurance---Management-of-Climate-Change-Risks-for-Commercial-Insurers.pdf

Expectations on having a key function dedicated to climate-related risks (n=30)

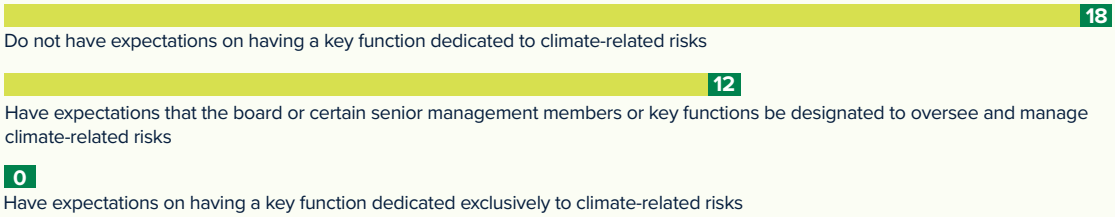

Figure 2. Expectations for insurers to have a key function dedicated to climate-related risks [Source: CSWG I Survey, 2024]

The expectations from respondents generally take the following three forms:

- Clear roles and responsibilities for the **board and its relevant sub-committees**, including exercising effective oversight over the insurer's climate risk management and controls, holding senior management accountable for their climate-related responsibilities, and ensuring that adequate resources, skills and expertise are devoted to managing the financial risks from climate change;
- Clear roles and responsibilities (set by the board or otherwise) for one or more **existing senior management members or committees** to manage climate-related risks and oversee climate-related risk management policy implementation, ensuring that climate issues are reviewed at a sufficiently senior level; and/or
- Clear roles and responsibilities for **certain existing key functions**, such as the risk management, compliance and actuarial functions. Control function role holders are expected to have the requisite knowledge and understanding of climate-related risks. For one respondent, the designated key functions are also expected to be involved in the development of a climate risk strategy, formulation of climate-related KPIs, innovation of insurance products to cover activities related to the global transition to a low-carbon economy, and the conduction of development studies regarding climate change risks.

According to one respondent, sustainability risks should concern all of the key functions as they participate in the risk management and decision-making process of the undertaking. Their report[31] on 'Governance of climate change risks in the insurance sector' offers some best practices regarding each of the key functions:

- The risk management function should consider climate risks like any other prudential risk and establish the associated risk mitigation policy.

31 https://acpr.banque-france.fr/sites/default/files/medias/documents/20220217_rapport_acpr_gouvernance_risque_climatique_assurance_vf.pdf

- The actuarial function should assess how climate risks influence portfolio valuation (transition risk), liabilities' valuation (physical risk) and the underwriting policy. Similarly, the function should ensure the quality of the data collected and associated with these risks.
- The compliance function should follow-up on regulatory developments regarding climate risks in order to ensure that the undertaking fulfils its requirements and adequately meets regulatory expectations.
- The internal audit function should include a climate risk component in its missions. Going forward, periodic audit missions focusing on these risks could be scheduled with the aim of assessing whether the climate risk management policy is adequately implemented.

None of the respondents have any expectation that insurers have a key function dedicated to the management of climate-related risks.

One respondent explained that this was due to insurers having diverse risk profiles, as well as different governance and risk management environments. Another respondent shared that while it expects insurers to have robust risk management systems and procedures, insurers are not expected to have functions dedicated to managing individual types of risks, including climate-related risks, due to the relatively small size of insurers in its jurisdiction. For two respondents, an insurer will be expected to have a dedicated function if climate risk is deemed material to that insurer. Another respondent noted that despite it not being a requirement, some insurers had set up their own dedicated climate change or ESG functions.

Section II

Supervisory Assessments of Insurers' ORSA Practices

Supervisory Assessments of Insurers' ORSA Practices

Climate scenario analysis in the ORSA or other similar requirements

Climate scenario analysis is used by insurers to assess the potential risks and vulnerabilities associated with climate change and to develop strategies for adaptation and mitigation. In the financial sector, many insurers are beginning to incorporate scenario analysis[32] into their broader sustainability strategy to enhance resilience against climate-related risks. For instance, in the banking sector, supervisory authorities are encouraging the use of climate scenarios[33].

Furthermore, insurers are incorporating climate scenario analysis within their ORSAs and enterprise risk management frameworks. According to the CSWG I Survey, 2024, about **60% of respondents have observed climate scenario analysis and/or climate stress testing being used by insurers in their ORSAs or other similar requirements**.

Has climate scenario analysis been considered in the ORSA or other similar requirements? (n=30)

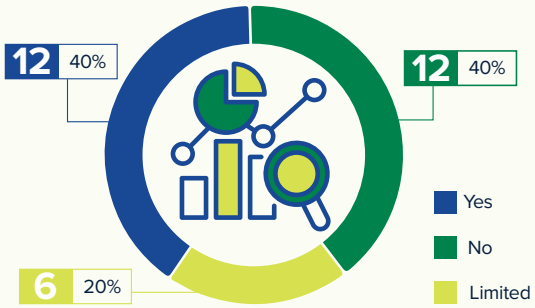

Figure 3. Incorporation of climate scenario analysis or climate stress testing in the ORSA or other similar requirements [Source: CSWG I Survey, 2024]

Some respondents have set supervisory expectations that climate scenario analysis be used by insurers in their ORSAs or similar requirements. For example, one respondent has issued a letter stating that insurers should be able to satisfy supervisors that they have embedded scenario analysis into their climate risk management and business planning processes, and are able to demonstrate how the results are being used in practice, including their impact on strategic and business decision-making.

Some respondents have either not set such expectations, or have set it as a desirable best practice rather than a mandatory requirement. Nonetheless, respondents observed that a large number of insurers in their jurisdictions have used climate scenario analysis in their ORSAs. About 20% of respondents reported limited use of climate scenario analysis in ORSAs, with only a few insurers in their jurisdictions having done so.

32 https://www.garp.org/risk-intelligence/sustainability-climate/climate-scenario-analysis-practices-211025

33 https://www.ngfs.net/ngfs-scenarios-portal/

The remaining **40% of respondents have not observed climate scenario analysis being used in their insurers' ORSAs, primarily because they have not conducted such a review of the insurers in their jurisdictions**. Some respondents do not stipulate that insurers conduct climate-related scenario analysis and/or stress tests in their ORSAs, while a few others are still in the midst of developing their ORSA requirements.

Respondents have observed a range of methodologies and assumptions being adopted in their insurers' climate scenario analyses and stress testing. These include:

- Some scenarios cover only extreme weather events, while others analyse more comprehensively the impacts of global warming.
- General insurers primarily consider the physical risks impacting their portfolios, such as a single large weather event or an increase in the frequency of adverse weather events. This is typically modelled by increasing claims costs, which reduces available own funds. They are also often designed to stress reinsurance arrangements (e.g. such that catastrophe reinsurance retentions are paid multiple times following multiple weather events in one year), or include an assumption that reinsurance will become more expensive following a large weather event.
- Life insurers tend to focus on the impact of transition risks on their assets (i.e. asset value shocks), or an increase in claims costs due to litigation risk.
- General insurers use a combination of commercial climate-conditioned catalogue catastrophe models and their own proprietary models. For life insurers, such commercial models are still in the infancy stage and less reliable, thus the use of more proprietary models or simple diversification of investment portfolios.
- Use of the methodology provided by data provider MSCI, that relies on three scenarios built on the predefined assumptions of 1.5°C, 2°C and 3°C increases in global temperature, at times along with other proprietary climate models.
- Use of the Central Banks and Supervisors Network for Greening the Financial System (NGFS) scenarios.

One respondent found that the scenario analysis capabilities of insurers were not sufficiently well-developed to support effective decision-making, with the primary constraints being the generation, collation, cleaning, analysis and integration of data in order to conduct decision-useful scenario analysis, with strong links to business strategy. For example, a limited number of insurers were using scenario analysis to consider the impact of climate risks on future revenue projections.

Where insurers were using climate risk models, the respondent found that they were generally still in the early stages of development, with some insurers making use of a combination of new models, existing models and third-party solutions to estimate impacts. Of those insurers, even though all were making use of proxies, manual adjustments and simplifying assumptions, there was limited information on how those data gaps and methodological challenges would be addressed. Insurers demonstrating effective practice have considered the uncertainty in their climate risk analysis, and taken this into account when using the results. For example, through the use of prudent assumptions, manual adjustments or sensitivity analysis to understand how results would change should events play out in different ways. Examples of effective practices demonstrated by some insurers include an ability to model a wide range of physical vulnerabilities in their assessment of underwriting risk, and the ability to identify and address the limitations of the third-party models used.

Case Study 2:

Climate-related risk assessment and scenario analysis

In the financial sector, climate scenario analysis is being conducted to evaluate the potential impacts of climate change on financial stability, climate-related financial vulnerabilities, and to develop internal scenario analysis capabilities. The NGFS scenarios[34] have led the way in developing climate scenarios for central banks, supervisors, and the financial sector, while consolidating best practices in climate scenario analysis. NGFS scenarios are categorised into orderly, disorderly, and 'hot house world', each reflecting different levels of physical and transition risks.

Both supervisors and insurers are calibrating climate scenario analysis in ways that suit their jurisdiction and capabilities. Some supervisors expect insurers to conduct their own climate scenario analysis and stress testing to assess climate-related risks.

In Belgium, the **National Bank of Belgium (NBB)** encourages insurers to design their own scenarios of material climate risks, in their ORSA, in alignment with the Paris Agreement without being prescriptive. Keeping in mind capacity constraints of firms, NBB also allows firms to focus on transition risk in one year, for example, and then on physical risk the next year.

The **Australian Prudential Regulation Authority (APRA)** expects the use of scenario analysis and stress testing for climate risks to be proportionate to an institution's size, business mix and complexity. APRA's Prudential Practice Guide CPG 229 Climate Change Financial Risks[35] highlights that "where an institution lacks the data, resources or expertise to conduct climate risk stress testing with appropriate quantitative assessments, it may still benefit from narrative driven scenario analysis".

34 https://www.ngfs.net/ngfs-scenarios-portal/use/
NGFS scenarios aim to provide a standardized set of scenarios and variables for disclosure, offering granular data on transition pathways, climate impacts, and macro-financial indicators. The scenarios are designed to assess impacts on profitability, business models, financial risks, and the broader economy, helping to identify risks and opportunities, understand implications for strategy and policies, and guide further research. Scenario analysis involves selecting relevant scenarios, assessing impacts on key variables like GDP, unemployment, and financial risks, and communicating results to improve risk awareness and management practices. The NGFS scenarios are not forecasts but tools to explore risks in various future states of the world, aiding central banks, supervisors, financial firms, and corporates in managing climate-related risks effectively.

In June 2020, the NGFS published a Guide to Scenario Analysis. While pitched at central banks and supervisors, it provides generic guidance on how to assess climate-related risks. The report identified four key steps (1) Scope exercise- Consider the objectives of the exercise. This could be to assess the impacts on profitability, business models, financial risks or the broader economy (2) Select scenarios - Select a range of scenarios that best suits the objectives of the exercise and the types of risks to be explored. For example, the Current Policies scenario is best suited to assessing physical risks (3) Assess the macro-financial impacts - Often, a qualitative assessment can be just as important here as a quantitative assessment (4) Communicate and use results - Scenario analysis can be a useful tool to understand risks and opportunities, identify the implications for strategy and/or policies and pinpoint areas for further research.

35 https://www.apra.gov.au/draft-prudential-practice-guide-on-climate-change-financial-risks

As stated in the Guidelines on Environmental Risk Management (Insurers), the **Monetary Authority of Singapore (MAS)** expects insurers to develop capabilities in scenario analysis and stress testing to assess the impact of material environmental risk on the insurer's risk profile and business strategies. This includes exploring insurers' resilience to financial losses under a range of outcomes and factoring in the interlinkages between environmental risk and other risks. MAS also expects insurers to include, where relevant, short-term and long-term environmental scenarios into its scenario analysis and stress testing for strategic planning and risk management purposes. Based on surveys conducted on selected insurers, MAS noted that majority of the surveyed insurers had piloted climate scenario analysis and/or stress testing on its portfolio and had incorporated climate risk scenarios as part of their ORSA, on top of the climate risk stress testing prescribed by regulators. Insurers are encouraged to continually review the scenarios used to ensure they cover a reasonable and comprehensive range of potential future climate states to facilitate a good understanding of the nature of the climate-related risks and opportunities they may face.

In the UK, the **Bank of England (BOE)** conducted its Climate Biennial Exploratory Scenario[36] (CBES) in 2021-22 as an exploratory exercise, considering both transition and physical risks, to different degrees, designed to improve capabilities of both the BOE and CBES participants, such as banks and insurers. The exercise considered an 'Early Action' scenario and a 'Late Action' scenario for net-zero UK greenhouse gas emissions by 2050 and a third 'No Additional Action' scenario explored the physical risks that would begin to materialise if governments around the world fail to enact policy responses to global warming.

In 2019, the **European Insurance and Occupational Pensions Authority (EIOPA)** conducted a survey on the use of climate change scenarios in the ORSA, showing that only a limited number of insurers included climate change risk assessment in their ORSA. This triggered the publication of EIOPA's respective opinion in April 2021, aimed at providing guidance[37]. EIOPA followed up with an application guidance[38], published in August 2022, aimed at providing easy-to-apply techniques for the assessment of climate change. The publication, addressed to SMEs with limited resources, provides examples and possible methodologies to be used when assessing climate change. Presently, EIOPA is conducting a cross sectoral stress test exercise, exploring climate scenarios for insurance, banking and markets together, and also assessing the cross interlinkages with Fit for 55 agenda of the European Commission[39].

36 https://www.bankofengland.co.uk/stress-testing/2022/results-of-the-2021-climate-biennial-exploratory-scenario

37 https://www.eiopa.europa.eu/publications/opinion-supervision-use-climate-change-risk-scenarios-orsa_en

38 https://www.eiopa.europa.eu/publications/application-guidance-climate-change-materiality-assessments-and-climate-change-scenarios-orsa_en

39 https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55/

Physical, transition and litigation risks in climate scenario analysis

Physical risks of climate change are associated with the direct impacts of climate change on organizations. These risks can lead to tangible damages to assets, disruptions in supply chains, and safety concerns for employees. Physical risks from climate change may be driven by both chronic risks associated with gradual changes in climate patterns (e.g., increases in temperatures, sea-level rise, and altered precipitation patterns) and acute risks associated with increased frequency and/or severity of weather events (e.g., tropical cyclones, storms, floods, and droughts).

On the other hand, transition risks are challenges arising from the transition towards a low-carbon economy. These risks are linked to shifts away from activities that contribute to greenhouse gas (GHG) emissions. Transition risks can manifest in various forms such as policy changes, technological advancements, market shifts, and reputational impacts, among others.

While the insurance sector is no stranger to physical risks, it now faces a dual challenge of addressing escalating climate change physical risks along with transition risks from changes in policy environments. In 2023, natural disasters worldwide led to approximately US$250 billion in losses; insured global losses in 2023 broke through the 10-year average, with losses sitting at US$95 billion[40]. With losses mounting, insurers are beginning to address the impact of the changing climate on their underwriting, pricing, and investment decisions, as well as their financial performance.

An emerging risk associated with climate change is litigation risk. Climate-related litigation risks encompass a range of challenges and potential legal actions that businesses, governments, and financial institutions face due to climate change impacts and responses. These risks can lead to financial, reputational, and regulatory consequences. Worldwide, there is a rapid surge in climate litigation cases, almost doubling from 2017 levels. As of December 2022, there have been 2,180 climate-related cases filed in 65 jurisdictions[41].

Have physical risk and transition risk been considered in scenario analysis or stress testing (n=30)

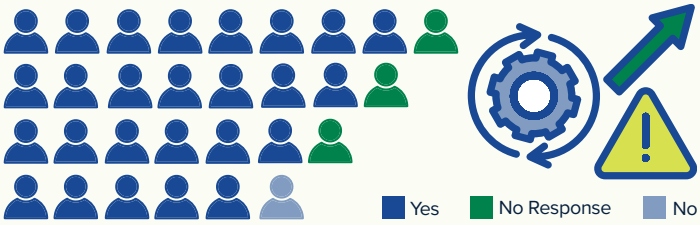

Figure 4. Consideration of physical risk and transition risk in scenario analysis or stress testing [Source: CSWG I Survey, 2024]

As per the CSWG I Survey, 2024, **87% of respondents have observed physical and transition risks from climate change being considered by insurers in their climate scenario analysis.** In general, physical risk analysis is predominantly undertaken or prioritised by general insurers, while transition risk analysis is more advanced within life insurers. For one respondent, insurers mostly

40 https://www.munichre.com/en/company/media-relations/media-information-and-corporate-news/media-information/2024/natural-disaster-figures-2023.html

41 https://www.unep.org/resources/report/global-climate-litigation-report-2023-status-review

focus on transition risks as they predominantly offer unit-linked savings products which have little exposure to physical risk.

Meanwhile, another respondent observed that while there had been improvements in scenario analysis capabilities for transition risk, insurers remain reliant on third-party modelling providers, and they have flagged data challenges faced in estimating potential losses on their invested assets.

Another observation by a respondent was that while some insurers' climate scenarios consider the impact of physical, transition and litigation risks separately, others combine all three risks in a single scenario.

Has litigation risk been considered in scenario analysis or stress testing (n=30)

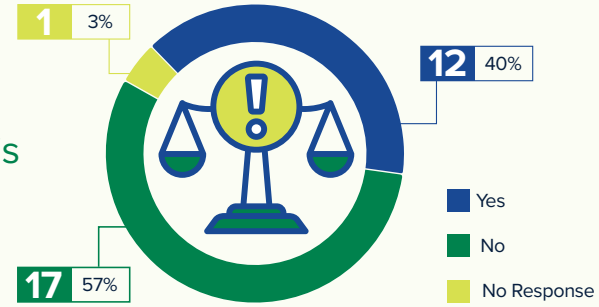

Figure 5. Consideration of litigation risk in scenario analysis or stress testing [Source: CSWG I Survey, 2024]

Compared to physical and transition risks, litigation risks have not been considered as much by insurers in their climate scenario analysis and/or stress testing.

40% of respondents have observed litigation risks being considered by insurers. However, in most of these jurisdictions, only a small number of insurers (typically the more sophisticated ones) have done so and/or most insurers typically focus more on physical and transition risks, rather than litigation risk. One respondent observed that while some insurers with known exposures have considered litigation risk, the analysis tends to be high-level and vague. Some respondents have explained that this could be due to litigation risk being nascent and difficult to assess in terms of stress testing and scenario analysis.

Consideration of litigation risk is growing, however. One respondent observed that insurers are increasingly using scenario analysis to assess potential exposures of climate litigation to their business and test whether coverage intent is aligned to current contract wording. For example, one insurance group announced plans for a liability-focused disaster scenario exercise in 2024. The respondent further observed examples of individual insurers developing bespoke climate litigation scenarios, including for Director & Officers Liability Insurance.

Forward-looking elements in climate scenario analysis or stress testing

Half of the respondents (15 out of 30) surveyed mentioned that insurers have yet to consider forward-looking elements[42] in scenario analysis.

Some of these respondents commented that it is still early in the process for them to consider those elements. For instance, respondents commented that the incorporation of forward-looking elements for climate scenario analysis or stress testing has only been recently considered and it is still too early for observations to be made. One respondent stated that most insurers in their jurisdiction have not yet implemented management actions or dynamic balance sheet assumptions into their analysis, although some insurers have indicated plans to incorporate these elements in the future. Another respondent highlighted that although long-term insurers include forward projections in the output of their stress tests, the climate-related shocks are typically applied at a single point in time and do not encompass future trends.

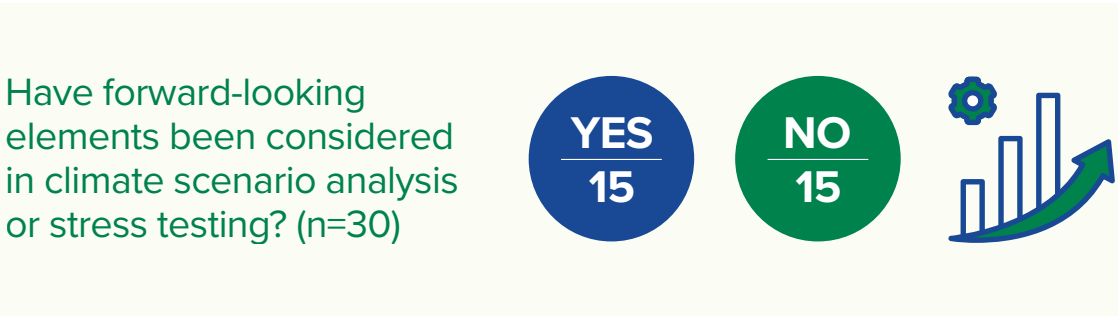

Figure 6. Consideration of forward-looking elements in climate scenario analysis or stress testing [Source: CSWG I Survey, 2024]

For the remaining half of the respondents, 13 noted that insurers include forward-looking elements within their ORSA as part of their scenario analysis, while 1 respondent has regulations or guidelines requiring insurers to consider it. Insurers incorporate forward-looking elements by considering the increased frequency and severity of stress events. For instance, one respondent mentioned that climate transition risk is viewed as a medium to long-term risk, thus the analysis reflects a forward-looking approach to assessing its impact. Another respondent highlighted that building a trending scenario is a requirement according to the local energy and climate law[43], although currently few insurers include this assumption in their scenarios.

The CSWG I Survey, 2024 also revealed that some property insurers have used trending factors to assist in their utilisation of climate scenario analysis for purposes of short- and-medium-term strategic decisions, particularly to assist in identifying areas where business could grow with less increased risk as other locations.

42 In reference to climate-related risks, forward-looking elements refer to the use of future-oriented approaches to assess and manage climate-related risks and opportunities. These elements are crucial for capturing the unprecedented impacts of climate-related risks, as backward-looking quantification based on historical data may underestimate the anticipated intensification of transition and physical risks.

43 Law no. 2019-1147, known as the (French) Energy and Climate Law which entered into force in 2022.

One respondent has observed that insurers have included a range of forward-looking elements across their scenarios, including:

- Increases in reinsurance expenses;
- Unavailability of reinsurance cover;
- Repricing of insurance policies;
    - Increased volatility in investment returns;
    - A higher frequency of moderate events within one year (because this can restrict the ability to reprice and limit the benefit from whole account reinsurance);
    - Weather events resulting in the closure of an insurer's local office or overseas office (where global services are centralised); and
    - Increased litigation activity regarding climate change misconduct.

Materiality assessment of climate-related risks

The **materiality of climate risk is being assessed differently by insurers**. One survey respondent observed that insurers in its jurisdiction treat climate change in a variety of ways – some as a distinct material risk category, some as a sub-category of ESG and strategy risks, and others by assessing it horizontally across all key risks (including insurance, credit and reputational risk).

- In some jurisdictions, the **supervisor provides some form of guidance** on the assessment of materiality of climate-related risks. For example, the Bank of England's 2021 Climate Biennial Exploratory Scenario (CBES) exercise helped to size the financial exposures of participants to climate risks, with the climate risks captured in the CBES likely to create a drag on the profitability of insurers, particularly if they are unable to manage those risks effectively. Another example is an application guidance developed by one supervisor for climate risk scenarios in the ORSA, which includes tools to assess whether climate risk is a material risk.
- Several respondents commented that materiality assessments are typically based on a combination of **qualitative and quantitative** assessments.
    - One respondent observed that most insurers are still using primarily qualitative assessments, although there is a lot of variation among insurers, with larger institutions using more sophisticated tools.
    - Another respondent observed that some insurers have quantified the impact of climate-related risks based on certain metrics, such as the percentage of invested assets, and the increased severity and frequency of natural catastrophe events over the projected period.
    - One respondent noted in its guidance to insurers that while the quantification of climate-related risks is an evolving area, the uncertainty of the risk does not preclude insurers from making informed judgments about the significance of climate-related risks to their businesses. Over time, when qualitative analyses demonstrate the probability of material climate-related risks, this assessment should include quantitative analyses.

- Some respondents observed that materiality assessments are being made by looking at **both sides of the balance sheet**. Insurers start by defining the context in which they will be exposed to climate-related risks, then examine the size of their exposure, the impact of climate change on the specific exposure (through scenario analysis or otherwise), and the probability and time horizon that the impact will take place.
- Some other respondents shared that the insurers in their jurisdictions assess the materiality of climate-related risks in **the same way as any other risk type**. This is typically via the insurer's internal risk monitoring mechanism, with the process usually outlined in the insurer's risk management framework.

Common mitigating actions by insurers in climate scenario analysis/stress testing

According to the CSWG I Survey, 2024, **respondents indicated that their supervised entities are employing a combination of mitigating measures to combat climate-related risks**.

Figure 7. Common mitigating actions emerging from climate scenario analysis or climate stress testing scenarios [Source: CSWG I Survey, 2024]

- The most frequently mentioned action is a **change in investment strategy**. One respondent explained that on the asset side, several insurers are in the process of implementing **transition risk mitigation strategies** for their investment policies, including focusing on sustainable investment, and restricting exposure to high-GHG assets or assets at risk of becoming stranded, such as in oil and gas production.

- Another commonly cited mitigation action is being **more selective in the underwriting process**, withdrawing insurance coverage in highly-exposed areas and updating contract wording for greater clarity of cover. These measures are aimed at de-risking completely from or reducing exposure to high climate risk areas. Insurers are also reassessing pricing adequacy in light of climate change and **re-pricing products or increasing insurance premiums** during annual renewals, where necessary.
- Respondents also observed insurers evaluating how climate-related risk may affect their own organization and operations. For instance, insurers are purchasing their own directors' and officers' personal liability insurance. Others are ensuring that they purchase adequate **reinsurance protection** to hedge against physical risks for exposures in vulnerable geographical locations.
- Respondents have also observed cases of insurers encouraging investment in **climate adaptation and community resilience initiatives**, both at a macro level, such as the construction of flood levees, and at micro level, such as retrofitting homes. One respondent also highlighted the importance of cooperation with governments on public-private solutions, in jurisdictions where natural catastrophe events caused by climate change are a major risk.

Overall, while moving away from non-sustainable investments and insurance coverage exposed to high climate-related risks is a desirable target in the long term, the process must be closely monitored to ensure that financing remains available to help such industries transition to net zero.

Supervisory assessment of insurers' climate-related risks using their ORSA reports

21 out of 30 (or 70%) respondents have considered an insurer's ORSA or similar regulatory requirements in their supervisory assessment of the insurer's climate-related risks. The remaining 30% acknowledged that they were still in the early stages of developing a supervisory methodology with regard to climate-related risks, or that supervisory assessment of climate-related risks has not been considered yet.

Are the outcome of the insurer's ORSA or other similar regulatory requirements considered in supervisory assessment of the insurer's climate-related risks (n=30)

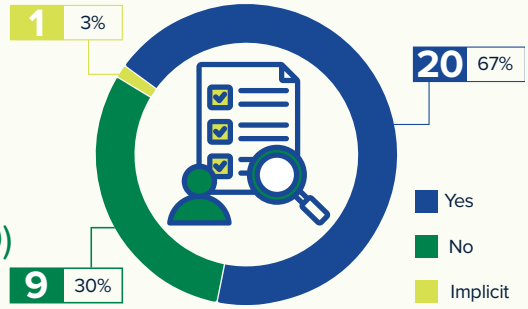

Figure 8. Outcome of insurers' ORSA considered in supervisory assessment of insurers' climate-related risks [Source: CSWG I Survey, 2024]

For most respondents, the climate-related scenarios and outcome of an insurer's ORSA form part of the supervisory risk assessments of individual insurers. Some respondents check which material risks are covered in the insurers' ORSA reports and, given the characteristics of the insurer, or if there are solvency concerns related to climate-related risks, ascertain whether climate-related risks are taken into account. For one respondent, the most exposed entities are then subject to on-site inspections on natural disaster modelling and climate change integration in their internal models. For another respondent, deficiencies in an insurer's approach to climate risk in the ORSA may be considered in the supervisory assessment of the insurer's risk management or governance practices. Given that the risk horizon of climate-related risks is relatively long term, another supervisor is currently monitoring the progress made by insurers in considering and incorporating climate risk stress test scenarios in their ORSAs.

Seven respondents have performed thematic reviews on ORSAs, usually to evaluate how insurers are meeting the expectations set by regulators in relation to climate-related risks. The results of this review are then typically communicated to the insurers, including recommendations on how to improve their analysis.

Several respondents acknowledged that their prudential frameworks and supervisory assessment processes will likely need to evolve over time to enable a more systematic consideration of climate-related risks. For example, one survey respondent is intending to carry out systematic work to include all insurers in its supervisory assessment of climate-related risks. This will be by conducting a market-wide survey to gather best practices on sustainability risks, including on the ORSA process. Some other respondents have considered requiring insurers to specifically address climate risk in their ORSAs, but at this point prefers to maintain the purpose of the ORSA as being focused on the insurers' "own risk and solvency assessment".

Case Study 3:

Use of Heat Maps to inform supervisory work

The **Central Bank of Ireland (CBI)** has developed a Climate Risk Heat Map for its internal use. This Heat Map uses a mix of available qualitative and quantitative information to assess (re)insurers' exposure to physical, transition and litigation risks. For example, it is informed by the review of (re)insurers' ORSAs, materiality assessments, data from Quantitative Reporting Templates (QRTs) on assets and NatCat Solvency Capital Requirement (SCR), engagement meetings with firms, and other supervisory reviews that have climate change risk as an element. An iterative approach has been taken to development of the Heat Map, which has been extended to encompass more firms, and more data points, year on year.

The Heat Map is used to identify (re)insurers with more significant potential exposure to climate related risks, which will in turn inform the scope and intensity of future supervisory engagement. CBI assigns a risk rating to firms for each of the following categories:

- Physical risk – gross of reinsurance
- Physical risk – net of reinsurance
- Transition risk – business model
- Transition risk – reliance on and availability of reinsurance and/or Group support
- Transition risk – market risk
- Transition risk - litigation risk

Section III

Capital Add-on Considerations

Capital Add-on Considerations

Use of capital add-ons as a microprudential tool to address any inadequacy in capturing climate-related risks

80% of respondents said their jurisdictions currently allow for capital add-ons to be used as a microprudential tool to address any risks which are not captured or inadequately captured by the supervisor's standard framework, or material weaknesses or supervisory concerns have been noted in an insurer's risk and compliance framework and practices. Respondents utilize a variety of assessment methods to determine whether and how much capital add-ons to impose, including – either on their own or in combination – supervisory reviews of regular returns (including ORSAs), ad-hoc or thematic assessments and reviews, regular interactions with insurers, on-site inspections or reviews of internal models.

Does your jurisdiction currently allow for capital add-ons to be incorporated as a microprudential tool to address any risk capture inadequacy or risk management deficiencies? (n=30)

Figure 9. Capital add-ons as a microprudential tool to address any risk capture inadequacy deficiency [Source: CSWG I Survey, 2024]

Of the 80% of respondents which currently have a capital add-on framework or are able to impose capital add-ons if required, **none has explicitly made provisions for climate-related risks.** In most of these cases, the respondents explained that their current frameworks are broad enough to cater to all forms of risk capture inadequacies and risk management deficiencies, including those in relation to climate-related risks, and therefore there is no need to explicitly specify that climate-related risks are catered for under these frameworks.

Has the capital add-on framework been adjusted to explicitly cater to climate risk? (n=30)

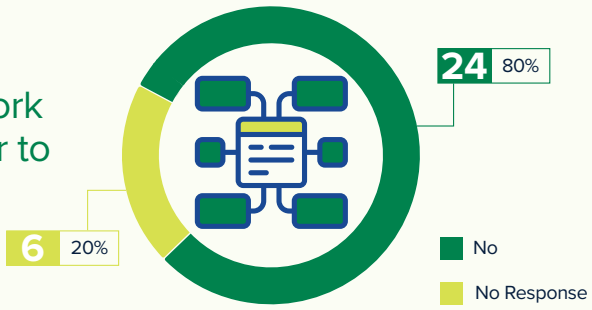

Figure 10: Capital add-on frameworks explicitly catering to climate-related risks [Source: CSWG I Survey, 2024]

The respondents further highlighted several challenges in adjusting their capital add-on frameworks to explicitly accommodate climate-related risks, or to, in practice, impose a capital add-on to specifically address climate-related concerns.

One key challenge is the difficulty in measuring and justifying the imposition of a capital add-on on insurers for climate-related purposes. Some respondents pointed to the absence of a (climate) science-based methodology to determine the appropriate capital add-on amount, as well as difficulty in establishing quantitative requirements for sustainability risks. This challenge arises as the calibration of risk requirements focuses on risks arising over a one-year period, whereas sustainability risks tend to materialize in the medium to long term. Another respondent explained that while the amount of capital held for natural catastrophe risk has tended to increase over time, it is harder to dissociate the impact of exposure changes, cyclical variability and climate risk from the overall change.

To address these challenges, one respondent mentioned that the availability of complete and accurate data would need to be improved, while another highlighted that both internal and industry capabilities, especially in transition risk assessments and physical risk modelling, would need to be built up.

Section IV

Macroprudential Policies

Macroprudential Policies

Outcome of the insurer's ORSA or other similar regulatory requirements

The CSWG I Survey, 2024 reveals that **none of the respondents have developed or considered developing any macroprudential policies or tools besides ORSA** (or similar regulatory requirements) to assess climate-related risks, or introduced any systemic capital buffer to prevailing regulatory capital requirements. On the lack of macroprudential policies besides ORSA, respondents have cited various reasons such as:

- The lack of empirical climate-related data and attribution methodologies, which makes it challenging to consider capital buffers.
- It not being clear yet what a capital buffer would seek to achieve from a prudential risk perspective, in addition to individual capital requirements.
- Climate-related (financial) risks not being a new risk category but a new risk driver, as they can be classified and captured in existing risk categories such as credit, market, insurance or operational risk.

Recognizing significant gaps in capabilities, data and tools, supervisors have started to address the data-related challenges pertaining to climate-related risks. For example, one survey respondent is in the process of consulting on a new regulatory return for climate risk and an industry-wide standardized climate scenario exercise, from which the data collected will help form the need for future updates to the regulatory capital framework. Reporting initiatives such as the TCFD and sustainability standards developed by International Sustainability Standards Board (ISSB) are intended to enhance disclosure of sustainability-related financial information, including climate-related information.

Case Study 4:

Leveraging climate-related data in the insurance sector

In Italy, a Risk Dashboard (RD) is used by the insurance regulator, **the Institute for the Supervision of Insurance (IVASS)** to assess the vulnerability of its insurance sector to climate-related risks. The RD is a risk assessment tool to address, among other risks, some of the climate-related data gaps issues by using a comprehensive set of indicators and data sources, including ESG risks. These indicators are aligned with the latest EIOPA Risk Dashboard and complemented with internally developed indicators. The RD is focused on a set of six climate indicators that are split up into three subsets - market, physical and transition risks. The physical indicators of climate risks include extreme climate index and the Italian insurance sector's exposure to flood risk, while indicators of transition risks include insurers' investments in green bonds and the share of climate-relevant assets based on their greenhouse gas emissions. The market indicators are captured under insurers' ESG rating and change of insurers' ESG ratings. As such, the RD serves as an instrument for macroprudential supervision of the financial sector, focusing on the insurance industry, such as governance profiles of insurance companies vis-a-vis their sustainability policies and integration of sustainability factors into their business strategies.

In the U.S., the **National Association of Insurance Commissioners (NAIC)** developed a Climate Risk Disclosure Survey in 2009 to better understand how insurers are considering and addressing climate change and climate-related risk in their business operations, underwriting, and investments. The survey is a voluntary risk management tool for state insurance regulators to request from insurers on an annual basis a non-confidential disclosure of the insurers' assessment and management of their climate-related risks. The purpose of the survey is to enhance transparency about how insurers manage climate-related risks and opportunities, identify good practices and vulnerabilities, provide a baseline supervisory tool to assess how climate-related risks may affect the insurance industry, promote insurer strategic management and encourage shared learning for continual improvement, enable better-informed collaboration and engagement on climate-related issues among regulators and interested parties, and align with international climate risk disclosure frameworks to reduce redundancy in reporting requirements. The survey is administered by the California Department of Insurance and surveys over 1,300 insurers reporting, representing nearly 85% of direct written premium in the U.S.

In late 2023, the **European Insurance and Occupational Pensions Authority (EIOPA)** launched the Catastrophe Data Hub as an open-source collection of catastrophe risk data at the European level. It provides European-wide data on insured losses for specific events like the 2017 wildfire in Portugal, the June 2013 floods, and the 2020 windstorm Ciara, as well as exposure data for natural catastrophes such as windstorm and flood. This data is valuable for supervisors to understand insurance exposure and losses, assess capital requirements, and quantify the insurance protection gap. It also benefits the insurance sector by providing access to loss data and fostering the development of catastrophe models. Additionally, policymakers can use this data to implement prevention measures, while academics can utilize it for independent modelling and studies on the impact of climate change on losses due to catastrophes.

Section V

Further Areas of Work

Further Areas of Work

When asked what other actions supervisors can take – other than providing guidelines and setting supervisory expectations – that may help to advance the use of micro or macroprudential policies and tools for climate-related risk analysis and assessment, respondents to the CSWG I Survey, 2024 suggested the following:

- The area highlighted most frequently by respondents is to **actively address data and methodological gaps** – in particular, by improving the accessibility, collection and analysis of data, metrics and models, including standardized data (such as from standardized industry-wide climate stress tests) and detailed climate-related disclosures. In fact, respondents highlighted the importance of data collection and analysis for supervisory purposes the greatest number of times, as well as the supervisor's role in fostering data sharing on the insurance sector. Some of the ideas suggested were collating and making available climate-related financial and non-financial metrics using a combination of internal and external data sources - such as a 'Climate Observatory'- as well as ad-hoc surveys. Respondents also suggested that information collected on weather-related risks could be used to analyse the consequences of climate-related risks on the insurance market.

- Another common suggestion from the respondents was the **sharing of best practices**, both between the supervisors and the insurance sector. Respondents highlighted the need to harmonize supervisory practices, and to share knowledge, tools and policies – including their effectiveness and how the policy or tool was catered to their specific market – among jurisdictions, especially with jurisdictions still developing in this space. Respondents also mentioned that identifying best practices within the insurance sector and sharing such information would be helpful to insurers.

- The need for **capacity building**, primarily for the industry but also for supervisors, was also mentioned. Respondents said workshops, training programs and seminars to better understand climate-related risks, organised by supervisors and customised for insurers' needs, would be welcomed by the industry. One respondent mentioned that it would also step up efforts to improve internal capabilities on climate risk assessments.

- Respondents advocated for **further research by supervisors to inform ongoing supervisory and regulatory thinking**. One respondent suggested targeted research on protection gaps, while another suggested conducting analysis to better understand the impact of climate-related risks across the insurance and wider financial sector. Another respondent suggested collaboration with academic institutions and climate experts to create advanced models and instruments for the analysis of climate-related risks.

- Two respondents mentioned that **regular stakeholder engagement** would be helpful, such as by facilitating dialogues between key stakeholder groups (government, insurance industry and other organizations) regarding climate-related risks, as well as the design and implementation of policies and tools.

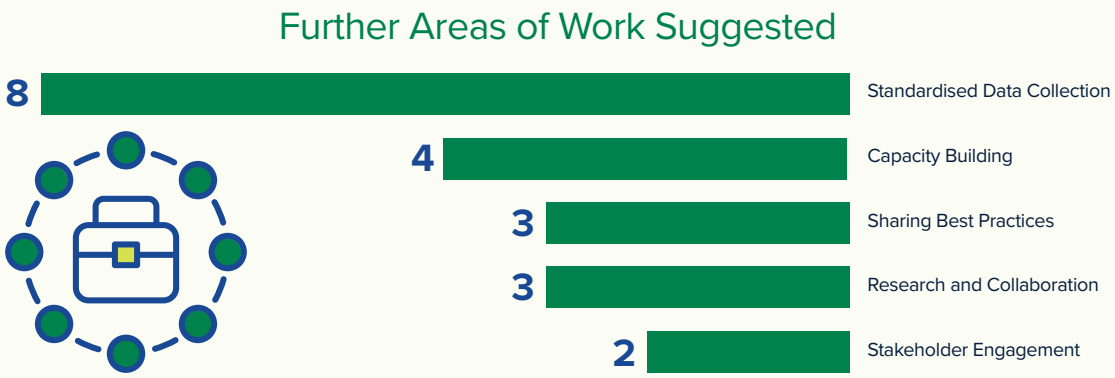

Figure 11. Further areas of work suggested to advance the use of micro or macroprudential policies/tools for climate-related risk analysis and assessment [Source: CSWG I Survey, 2024]

Other suggestions from respondents include on-site inspections[44], periodic review of catastrophe risk modelling practices, running pilot climate risk assessment projects to help reveal practical challenges and benefits of various tools and measures, as well as the implementation of regulatory sandboxes. One respondent proposed having an international standard setter guidance on the design principles for macroprudential instruments for climate risk in the insurance sector.

44 One European regulator is planning to conduct inspections based on a market survey to firms in its jurisdiction on approaches to integrating sustainability risks in the governance of insurance and reinsurance undertakings. This is intended to assess the implementation, by insurers, of the amendments to the Solvency II Delegated Regulation 2015/35 that came into application in August 2022. The survey incorporates questions specific to the ORSA process, and climate change scenarios into the ORSA. It also asks companies how they take sustainable risk into account in risk management, the prudent person principle, underwriting and provisioning, remuneration policy and ORSA scenarios, etc. The modalities of inspections will broadly depend on the responses to this questionnaire.

Conclusion

As evident from the CSWG I Survey, 2024, climate-related risks are being considered by insurance supervisors in multifaceted ways. **Most survey respondents have either developed guidelines linked to sustainability risks, including climate-related risks, or have started to update their existing frameworks to incorporate climate-related expectations** for insurers. Some respondents have also started to mandate that insurers designate one or more persons at board or management level to oversee climate-related risks.

Furthermore, the CSWG I Survey, 2024 confirms the results of the SIF Survey 2022 that **in addressing climate-related risks, respondents prefer using ORSA and similar regulatory requirements** over capital add-ons and macroprudential tools. Indeed, 70% of respondents mentioned that they have considered the outcome of insurers' ORSAs in their supervisory assessment of insurers' climate-related risks, which may result in prudential actions taken.

The CSWG I Survey, 2024 has also highlighted current practices by insurers. Over half of the respondents surveyed have observed **climate scenario analysis and/or climate stress testing being used by some insurers in their ORSAs** or other similar requirements.

In scenario analysis, **insurers' assessments of physical and transition risks are found to be much more prevalent than litigation risks.** Respondents also highlighted that insurers that perform climate scenario analysis have included a range of forward-looking elements across their scenarios. Half of the surveyed respondents noted that **insurers are also assessing the materiality of climate-related risks, both quantitatively and qualitatively.**

Insurers were observed to be taking a range of measures to **mitigate climate-related risks**, such as changes in their investment strategy, selective underwriting, and the purchasing of adequate reinsurance protection.

Most respondents have **capital add-on frameworks that are broad enough to cater to climate-related risk management deficiencies**. However, some of the challenges of imposing a capital add-on for this purpose or adjusting the framework to explicitly cater to climate-related risks, are the lack of sufficient scientific methodology to determine the appropriate capital add-on amount, as well as difficulty in determining quantitative requirements for climate-risks, which tend to materialize in the medium to long term. On the other hand, none of the survey respondents have developed or considered developing any **macroprudential policies** or tools besides ORSA (or similar regulatory requirements) to assess climate-related risks or introduced any systemic capital buffer to prevailing regulatory capital requirements.

Respondents to CSWG I Survey, 2024 have suggested some **actions** that might help to strengthen climate-related risk analysis and assessment. These include actively addressing **data and methodological gaps, sharing of knowledge and best practices, capacity building, further and targeted research to better understand climate-related risks in the insurance sector, and regular stakeholder engagement**.

Annex I: CSWG I Survey Questionnaire

1. Which of the following components has your jurisdiction considered or incorporated in setting out climate-related risk guidelines/ requirements/ supervisory expectations, e.g. governance requirements (internal policies on risk management, key function(s) dedicated to climate risks, etc), ORSA or other similar regulatory requirements, capital-add ons, macroprudential policies/ tools? Please describe.

Components	Description
Governance requirements	
a) Internal policies on risk management	
b) Key function(s) dedicated to climate risks	
ORSA and other similar regulatory requirements	
Capital add-ons	
Macroprudential policies/tools	
[Provide any other components that the supervisor may have]	

2. If applicable, please provide further information on the governance requirements in your jurisdiction:

   2.1. Have you incorporated in your guidelines/ requirements/ supervisory expectations for insurers to have climate-related risk management policies?

   2.2. If you have not done so, what are the challenges that you have faced?

   2.3. Do you require/expect insurers to have a key function dedicated to climate risks? If so, what is the supervisory expectation of this function?

In the ORSA documents of entities in your jurisdiction or other similar regulatory requirements, SIF would like to understand both the supervisors' observations of insurers' ORSA practices and supervisory assessments of the ORSA practices in relation to climate-related risks.

3. Supervisors' observations of insurers' ORSA practices

   3.1. Have climate scenario analysis or climate stress testing scenarios been considered in the ORSA or other similar requirements?

If yes to 3.1,

3.1.1. what are the methodologies and assumptions adopted in the climate scenario analysis or climate stress testing?

3.1.2. have physical risk, transition risk and litigation risk been considered in scenario analysis or stress testing? Please elaborate further.

3.1.3. have any forward-looking elements (e.g. trending factor), if any, been considered in the climate scenario analysis or stress testing? Please elaborate further.

3.1.4. If yes to 3.1.3., what are the key forward-looking elements of climate scenario analyses or climate stress tests have you found to be beneficial in providing an accurate reflection of the extent of climate risk exposure?

3.2. How have the insurers in your jurisdiction assessed whether climate risk is a material risk?

3.3. How have these approaches in material risk assessment of climate risk considered the following aspects:

- physical risk,
- transition risk
- litigation risk
- underwriting of climate risk sensitive portfolio
- investing of investments that support transition to net zero

3.4. What are some of the common mitigating actions that emerge from the climate scenario analysis or climate stress testing scenarios?

Supervisory assessments of insurers' ORSA practices

3.5. How have you considered the outcome of the insurer's ORSA or other similar regulatory requirements in your supervisory assessment of the insurer's climate related risks?

3.6. If you have not done so, are there plans to consider the outcome of the insurer's ORSA or other similar regulatory requirements for such supervisory assessments in the future?

3.7. If yes to 3.6, please elaborate on how you envisage that may take place.

Capital add-on considerations in your jurisdiction

Capital add-ons can be used as a microprudential tool under the supervisory and solvency assessment frameworks, and are typically used to address 2 types of issues, (1) risks that are not captured or not adequately captured under the (standardized approach) regulatory capital requirement, and/or (2) issues relating to weak governance. SIF would like to understand whether insurance regulators are considering to incorporate a capital add-on as a buffer for climate risks and how this is being or can be designed.

Risk not covered- climate risks

4. Does your jurisdiction currently allow for capital add-ons to be incorporated as a microprudential tool to address any risk capture inadequacy or risk management deficiencies?

   Yes – Please proceed to question 4.1 (and skip 4.2)

   No – Please proceed to question 4.2 (skip 4.1)

   4.1. If yes,

      4.1.1. Please elaborate on how the assessment for capital-add-on is conducted.

      4.1.2. Can the framework be broadened to cater to climate risk?

         a. If yes,

            i. Has the capital add-on framework of your jurisdiction been adjusted to cater to climate risk?

            ii. If yes, to i, what are the adjustments and assessments made?

            iii. If yes to i, what are the challenges faced, and how have you dealt with these challenges?

            iv. If no to i, what are the challenges that you foresee in making (i) a successful endeavor, and how do you plan to deal with these challenges?

         b. If not, do you intend to come up with another framework?

            i. If yes, please briefly describe the framework you have in mind. (e.g. the approach, methodology).

            ii. If no, please explain why.

   4.2. If no,

      4.2.1. Does your jurisdiction intend to introduce a framework that will allow the imposition of capital-add ons in the next 3 years?

         4.2.1.1. If yes, what are the considerations for such framework?

         4.2.1.2. If yes, please briefly describe this framework you have in mind (e.g. the approach, methodology)

         4.2.1.3. If yes, given that estimations in this area are extremely difficult, how are you dealing with this challenge?

         4.2.1.4. If no, please explain why.

Macroprudential policies are designed to promote financial stability and in conjunction with microprudential supervisory practices, help mitigate the buildup of systemic risks. Given the potential impact of climate-related financial risks, macroprudential policies could be a useful instrument to address them. However, there would be a need to carefully define the scope of application of such policies when addressing the systemic implications of climate-related risks in order to avoid exacerbating transition risks. The SIF is interested to understand whether insurance regulators are exploring the use of macroprudential policies to address climate-related risks, and how such policies can be effectively designed.

5. Aside from the use of ORSA or other similar regulatory requirements, has your jurisdiction considered developing or developed any macroprudential policies or tools to assess climate risk and to introduce, where needed, a systemic capital buffer to the prevailing regulatory capital requirement?

    5.1. If yes,

        5.1.1. Please elaborate on the mechanism of how this policy/tool works or is envisaged to work.

        5.1.2. Is there any specific climate-related risk metric that may be useful in calibrating such a systemic capital buffer?

        5.1.3. What are the data sources, analysis or preparatory work required to develop the tool in an effective manner?

        5.1.4. What are the challenges that you foresee that can prevent this tool from being an effective solution?

    5.2. If no,

        5.2.1. Please provide reasons.

6. Other than providing guidelines and setting supervisory expectations, what other actions from supervisors may be helpful in advancing the use of micro or macroprudential policies/tools for climate-related risk analysis and assessment?

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For more information, please visit:

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