

Draft supporting material on macroprudential and group supervisory issues and climate risk

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1 Climate risk ICP 24 related supporting material

1. ICP 24 (Macroprudential Supervision) sets out standards for supervisors to “identify, monitor and analyse market and financial developments and other environmental factors that may impact insurers and the insurance sector, use this information to identify vulnerabilities and address, where necessary, the build-up and transmission of systemic risk at the individual insurer and at the sector-wide level”. As noted in earlier IAIS publications, climate change is not only a source of financial risk for individual insurers; it may also have wider implications on financial stability. Therefore, within their application of macroprudential monitoring and supervision requirements, supervisors should also consider climate-related risks and the potential wider financial stability implications.
2. Consistent with the objective of application papers, this section provides further advice, illustrations, recommendations or examples of good practice to supervisors on how ICP 24 may be implemented in the context of climate-related risk drivers. It highlights, where applicable, existing supporting material, notably the Application Paper on macroprudential supervision,¹ for assessing and addressing climate-related risks from a financial stability lens. In that Application Paper, climate risk is considered implicitly similarly to any other risks. The purpose of this supporting material is therefore to provide specific considerations and recommendations related to climate risk.

1.1 Climate change and financial stability risks

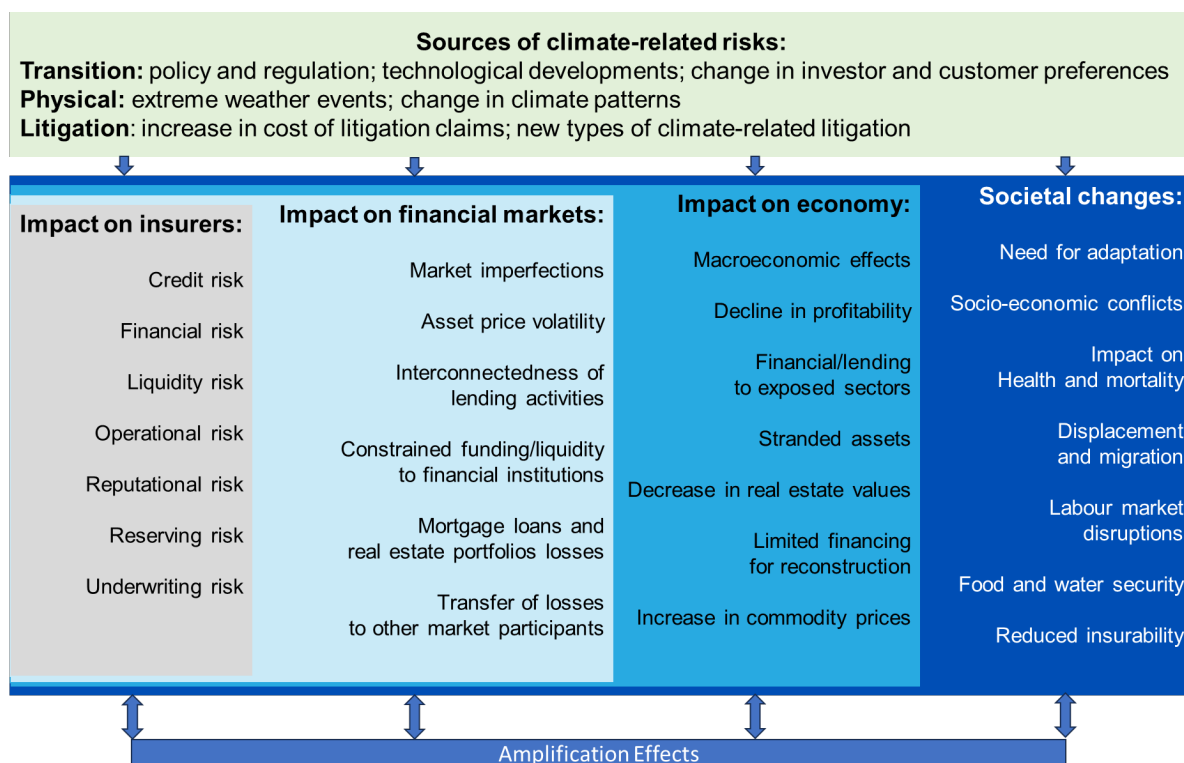
3. In September 2023, the United Nations Framework Convention on Climate Change issued a technical report on the first global stocktake on the implementation of the Paris Agreement. The report states that “global emissions are not in line with modelled global mitigation pathways consistent with the temperature goal of the Paris Agreement, and there is a rapidly narrowing window to raise ambition and implement existing commitments in order to limit global warming to 1.5 °C above pre-industrial levels”. Given the limited progress so far, the likelihood of a delayed and divergent transition has increased, which has a considerable impact on the insurance sector by increasing physical, transition, liability and reputational risks. Therefore, it is critical for supervisors to strengthen their understanding of the types and magnitudes of climate-related risks and exposures of the insurance sector in order to effectively identify, monitor and reflect climate change risks in their supervisory responsibilities.
4. Insurers are exposed to climate change both as underwriters and investors. As such, they may be affected by the impact of climate risk-related drivers on financial, credit, liquidity, underwriting and reserving risks. The transmission channels represent how adverse climate risk events could spread beyond the insurance sector and impact the wider financial system. Initial impacts on the financial system could also trigger reactions with other participants within the financial system (including insurers) trying to mitigate the impact of the events on their balance sheet. These reactions could generate feedback loops within the financial system and, ultimately, through macroeconomic and social effects, also have an impact on the real economy. Not all climate risk-related events generate a significant impact or turn into systemic risks if they materialise, but

¹ See IAIS, *Application Paper on macroprudential supervision*, 27 August 2021, www.iaisweb.org/uploads/2022/01/210830-Application-Paper-on-Macroprudential-Supervision.pdf.

insurers could contribute to the generation or amplification of systemic risk induced by climate risk events.

5. The wide-ranging nature of climate-related risks may limit market participants' ability to accurately assess and manage their investments, potentially resulting in increased risk premiums across various asset classes. Furthermore, the lack of consistent methodologies, standardised metrics and comparable disclosures around climate risk may also limit the effective market pricing of investments. Additionally, market and credit risks may be concentrated in specific geographic regions and sectors of the real economy. In some regions, insurers' investment portfolios, especially mortgage loans and real estate holdings, are particularly susceptible to climate-related risks, leading to heightened default risk.
6. Furthermore, insurers may face reputational risk due to their financial support for carbon-intensive sectors, and they may also be exposed to counterparty risk from their business relationships with companies facing climate-related legal liabilities. These factors could have implications for the broader financial system.
7. When designing their data collection, analysis and supervisory responses, supervisors may wish to consider the climate-related risk drivers and possible financial stability transmission channels described in Figure 1. This context builds upon a 2021 publication from the IAIS, the special topic edition of the Global Insurance Market Report (GIMAR).²

Figure 1:



² See IAIS, "The impact of climate change on the financial stability of the insurance sector", *Global Insurance Market Report*, September 2021, www.iaisweb.org/uploads/2022/01/210930-GIMAR-special-topic-edition-climate-change.pdf.

8. Supervisors should also consider the fact that important interdependencies may exist between climate-related risks, such as physical and transition risks. For instance, if the effective transition to a more sustainable or net zero economy is delayed, this may increase the probability that physical risks will materialise, including in the severity and frequency of physical risk events. In turn, sharp increases in economic losses from weather-related events may trigger more abrupt policy responses, leading to higher transition risks. Supervisors should also consider the impact of physical and transition risks under different transition pathways, such as under an orderly transition scenario and a disorderly transition scenario. There could be substantial transition risks associated with abrupt policy action (for example, caused by a sudden introduction of or substantial increase in emission pricing) and, eventually, even higher physical risks associated with policy inaction. In the least favourable scenario, extreme climate-induced damage as a result of long delays in the transition will eventually force a sudden and radical change in the economy.

1.2 Data collection for macroprudential purposes

9. Sound macroprudential supervision of climate-related risk drivers, as for all risks, is reliant on timely and good quality data to support analysis and decision-making. Data collection for macroprudential purposes is a critical element of macroprudential supervision and systemic risk assessments at an individual insurer level and a sector-wide level (see ICP 24.1 (Scenario Analysis Data Collection)).
10. As for other risks, supervisors should put in place appropriate policies and processes to collect regular and systematic climate-related information from insurers they supervise. Supervisors should collect both quantitative and qualitative data from insurers or use data and analysis from other external sources, such as jurisdictional statistics and academic research. Supervisors should first make use of the data sets that are available and consider the costs and benefits of obtaining additional data. Data and information can be requested on a legal entity level or group-wide basis.
11. Data collection for macroprudential purposes should consider the same aspects as does that for other risks, which are outlined in the Application Paper on macroprudential supervision, Section 2. More specifically regarding climate-related risks:
 - Supervisors should recognise that data needs may evolve to reflect the changing characteristics and materiality of various climate-related risk drivers, as well as advances in data availability.
 - Given the still nascent nature of many climate-related data sources, the ability to achieve a representative sample to support macroprudential analysis and ability to perform data validation may be more limited than for traditional risks.
 - Supervisors may need to enhance their overall data governance and IT infrastructure to accommodate some types of climate-related data, as macroeconomic analysis of some climate-related risk drivers may require more granular data (eg spatial) compared with traditional risks.
12. Recognising the challenges some insurers may have in providing climate-related data, the supervisor may complement information provided by insurers with data from other sources. Supervisors may for instance wish to employ third-party models for assessing their jurisdiction's exposure to natural catastrophe (NatCat) risks or utilise scientific physical risk projections. Also, data already provided by insurers could be used as a proxy for exposures to climate-related risk drivers, eg sector breakdown of investments.

13. Coordination with supervisors in other jurisdictions or other financial sectors will be key to understanding systemic financial impact. In instances where spillover effects on other parts of the financial sector (eg banking) are likely, a cross-sectoral approach may be needed.
14. Frequency of monitoring should be similar to that of other risks and preferably at least annually. While the projections of climate risk drivers may not need to be changed frequently due to their relative stability, insurers' climate risk exposure may nevertheless change due to changes in insurers' asset and liabilities composition.
15. Annex 1 provides examples of indicators and data elements that could be used to monitor climate risk trends and assess the potential build-up of climate-related systemic risk for individual insurers and the insurance sector as a whole.

IAIS climate data and analysis

The IAIS has been integrating climate-related data elements into the IAIS Global Monitoring Exercise (GME) for several years, contributing to a global foundation of climate risk data. This, in turn, facilitates improved analysis of climate change and its effects on the global insurance sector.

Through an iterative process, the IAIS continues to improve its insights into the insurance sector's exposure to climate-related risks, including:

- Building on the GIMAR 2021, the annual GME exercises have, since 2022, been gathering more detailed information on insurers' assets to enhance the analysis of insurers' investment exposure to climate-related risks.
- In 2023, the quantitative data collection and analysis also included insurers' liability risks related to exposures to NatCat events.

As supervisors and the insurance industry refine parameters and definitions, the depth and familiarity of the data will continue to grow.

1.3 Risk dashboard for monitoring climate-related vulnerabilities

16. As for other risks, supervisors should set out an approach to aggregate, analyse and present available climate data to allow for the monitoring of climate-related vulnerabilities and macroeconomic instability. Supervisors could also develop a climate-specific risk dashboard or include climate risks in a general risk dashboard covering all risks (for example, see [EIOPA Insurance Risk Dashboard](#)).
17. A risk dashboard could be a useful tool to provide initial insights into climate-related vulnerabilities. Given the challenges for some supervisors to collect climate-related data directly from insurers, the dashboard may also contain third-party quantitative and qualitative information. The frequency of updating may depend on the availability of data, the stage of the financial cycle and other market developments or impending disruptions.
18. The climate risk dashboard should include indicators covering the different types of transmission channel, for example climate risk scenario impact on investments or projected impact of climate change on NatCat capital requirements. If climate risk-based indicators are not available, exposure-based proxies, such as investment breakdown by high-carbon intensive sectors or

NatCat exposures by peril, could also be used. Also, the climate risk dashboard could include key climate policy and climate science metrics, such as emission gaps relative to the Paris Agreement, emission pricing levels or current global warming projections.

1.4 Data analysis for macroprudential purposes

19. Given the nature of climate change, the historical trends of climate risk drivers are unlikely to be indicative of how they will develop in the future. Therefore, scenario analysis and stress testing should be employed to facilitate macroprudential analysis. The [IAIS Draft Application Paper on climate scenario analysis](#) provides guidance on how supervisors could integrate climate-related scenario analysis into supervisory processes to assess the potential systemic importance of individual insurers and the insurance sector (ICP 24.3 (Assessing Systemic Importance)), using climate-related scenario analysis to inform supervisory response (ICP 24.4 (Supervisory Response)), and publish relevant data and statistics on the insurance sector from climate-related scenario analysis exercises (ICP 24.5 (Transparency)). For their macroprudential assessment of risks stemming from climate change, supervisors can consider additional approaches as well, including those described in the Application Paper on macroprudential supervision, such as vulnerability analysis, horizontal reviews and qualitative analyses.

1.4.1 Analysis of climate-related vulnerabilities of the insurance sector

20. In performing their analysis of climate-related vulnerabilities, supervisors should first identify key climate risk drivers and trends to help themselves verify whether a risk driver is emerging and could have wider implications for the stability of the insurance sector. Such drivers could include current global warming, global emission gaps relative to the Paris Agreement, current/projected carbon taxes etc. Subject to availability of data, a quantitative analysis of climate-related vulnerabilities should be performed. Annex 1 provides examples of climate risk indicators (consistent with the list referenced in the Draft Application Paper on public disclosures and supervisory report on climate risk) that could be used for such an analysis.
21. The information and data for this analysis may not be available to the supervisor through public disclosures or supervisory reporting and may require that additional quantitative and qualitative data be requested. While standard data and information requests and planned periodic reporting are typically used for monitoring traditional risk factors, additional requests may be necessary to investigate climate-related vulnerabilities. Considering this analysis is influenced by governmental and international policies, social and economic-financial events that may change over time, this analysis may require the use of ad hoc information.
22. Assessment of second-round effects (eg through climate risk drivers impacting the supply chains of insurers' counterparts) could be particularly useful to achieve a comprehensive assessment of the impact on an insurer. Furthermore, a risk assessment of the second-round effects induced by endogenous drivers following actions taken by financial institutions, households, regulators and/or policymakers in response to an initial climate risk impact or scenario could be performed. For inward risk, supervisors could assess whether insurers have incurred losses from second-round effects that resulted in premium increases (eg catastrophic risk or legal liability risk connected to climate-related litigations). Such analysis may be complex; hence, supervisors may need to rely more on qualitative assessments and consider enhancing their assessments commensurate with availability of data. Finally, supervisors should aim to identify new and emerging threats to financial stability in the insurance sector arising from climate-related risk drivers.

1.4.2 Qualitative Analysis Methods

23. As outlined in Section 3.3 of the Application Paper on macroprudential supervision, supervisors could also consider undertaking regular qualitative analysis methods (eg review of questionnaires, surveys or published material) to monitor and assess specific risks that might not necessarily be identified by quantitative analysis methods or if quantitative analyses cannot be deployed due to data constraints.
24. In addition, for climate risk assessments, supervisors should identify the key sources of market, industry, climate policy and scientific information and take into account key drivers and developments, such as progress towards net zero commitments, latest global warming projections or jurisdictional decarbonisation plans, when assessing the information. Supervisors should ensure that there is an appropriate internal focus on regularly reviewing climate-related macroprudential supervision issues and market specificities and, where appropriate, initiate senior-level engagements with insurers on these issues. For this purpose, it could be useful for supervisors to keep abreast of the main developments observed by financial, insurance and climate analysts that can influence the insurance sector.
25. Macroprudential supervision should use approaches from a multi-disciplinary and cross-sectoral perspective in order to identify activities, trends and developments that might negatively affect the risk profile of insurers. In line with ICP 24.2.3, supervisors could assess analytical perspectives of relevant stakeholders in public and private sectors by setting up periodic meetings (eg annual workshops) with different stakeholders involved in the insurance sector, climate policy and climate science.
26. Supervisors could benefit from comparative analyses conducted by different stakeholders on climate risks and impact on the sector from different perspectives, both in terms of impact and probability of occurrence.

1.4.3 Horizontal reviews

27. As with other risks, to study aspects from a macroprudential perspective, consistent with ICP 24.2 (Sector Analysis), supervisors could perform horizontal reviews of insurers and relevant data aggregation or make use of both public and other sources of information that provide horizontal perspectives.
28. Horizontal qualitative analyses can be conducted through:
 - Preset questionnaires with multiple choice answers (eg perception of risk level: high, medium-high, medium, medium-low, low); or
 - Questionnaires with open-ended responses.
29. Supervisors may also find it useful to perform peer group or benchmarking analysis for horizontal reviews.

1.5 Supervisory response

30. A macroprudential perspective in the development and application of supervisory requirements is important to help limit the build-up of systemic risk and contribute to the resilience of the financial system. Depending on the outcome of climate-related vulnerability analysis, supervisory responses may be targeted at individual insurers and/or the insurance sector as a whole. In cases where identified vulnerabilities in the jurisdiction originate from other parts of its financial

sector, the supervisor may wish to coordinate with other institutions in their jurisdiction or otherwise highlight the risks publicly.

31. Climate-related systemic risk could change over time, and supervisory responses therefore should be tailored to circumstances at each point in time.
32. Supervisors should also have the necessary flexibility to tailor their supervisory responses to the nature, scale and complexity of their insurance sector exposures and activities.
33. As for other risks, supervisory response can be twofold in nature:
 - General supervisory requirements aimed at reinforcing the resilience of the insurance sector and limiting the possibility of any disorderly failures; and
 - Targeted supervisory requirements focused on addressing a specific potential systemic exposure.
34. In order for these measures to have successful outcomes, it is important that macroprudential frameworks be based on efficient and robust coordination and cooperation processes with relevant supervisors in other jurisdictions or other financial sectors.
35. In line with ICP10.2, many supervisory measures could utilise microprudential instruments that are applied with a macroprudential perspective in mind, such as:
 - Strengthening how climate risk is reflected in enterprise risk management (ERM) frameworks;³
 - Crisis management and planning for climate-related natural catastrophes; and
 - Preventive and corrective measures that may be considered, for example:
 - Prohibiting the insurer from underwriting certain climate-related risks;⁴
 - Withholding approval for acquisitions; and
 - Directions to reinforce the insurer's financial position, such as requiring measures that reduce or mitigate risks or applying a capital add-on.

2 Climate risk ICP 25 related supporting material

36. This section discusses issues that are particularly relevant in the context of insurance group supervision. Considerations discussed in this section may be relevant for group supervision more generally and, in particular, in cases where the group has been identified as an internationally active insurance group (IAIG). In these cases, ComFrame standards will apply and the group-wide supervisor coordinates with other involved supervisors through the supervisory college (see CF 25.6.a). Supervisory colleges should consider in its agenda and its supervisory plan a

³ See the section titled "Proposed new climate risk-related supporting material related to ICP 16", March 2024, in Climate Risk Consultation Package 3 - Proposed supporting material to reflect climate risk, www.iaisweb.org/uploads/2024/03/Climate-Risk-Consultation-Package-3-Supporting-Material.pdf.

⁴ Supervisors are encouraged to consider any possible negative impacts of such supervisory action, and to avoid such action would increase the insurance protection gap. See also section 2.1 of the IAIS, "A call to action: the role of insurance supervisors in addressing natural catastrophe protection gaps", November 2023, www.iaisweb.org/uploads/2023/11/IAIS-Report-A-call-to-action-the-role-of-insurance-supervisors-in-addressing-natural-catastrophe-protection-gaps.pdf.

discussion on climate-related risks including how such risks may impact group-wide corporate governance frameworks, ERM, main risks, financial position, and regulatory capital adequacy and compliance with supervisory requirements (see CF 25.6.a.4).

2.1 Group considerations for data collection

37. When defining climate-related data collection requests that affect insurance groups active in multiple jurisdictions, supervisors should consider coordinating with other involved supervisors and regional or global insurance standard setters. This should reduce the number of overlapping requests that insurers receive, help to build a greater understanding across the insurance group's supervisors of the climate risks to which it is exposed and help build capacity amongst the supervisory community. However, group-wide climate risk integration into the corporate governance framework, enterprise risk management and financial position may not be properly covering what is required of an individual insurance legal entity in a specific jurisdiction.
38. Also, as is the case for traditional risks, data could be collected from other supervisors when an insurer operates in multiple jurisdictions (see ICP 25 (Supervisory Cooperation and Coordination)).
39. Furthermore, supervisors should coordinate when performing an assessment of an insurer's exposure to climate-related risks and whether any supervisory response may be considered necessary following such an assessment.

Annex 1

This annex provides a non-exhaustive list of climate-related indicators and data elements that could be analysed for macroprudential purposes. Some of these indicators and data elements may exist in publicly available market data or supervisory reporting data.

Examples of physical risk indicators

These indicators help to evaluate the potential impact of physical climate-related events on insurer assets and underwriting:

Asset and underwriting risks

- Frequency and severity of natural disasters and chronic weather-related changes: indicators measuring the incidence and impact of events like hurricanes, floods, wildfires and droughts as well as the incidence and impact of weather-related changes such as heat stress, humidity and increase in vector-borne diseases;
- Geographical risk exposure: assessing the vulnerability of geographic areas to climate events for life and non-life exposures;
- Different physical risk scenarios that can be used to produce a range of potential impacts on insurance liabilities and investments; and
- Projected financial impact of an increase in frequency and severity of weather events: estimating how frequent and how severe weather-related events (like hurricanes, floods, droughts) might become under different warming scenarios and how they may affect financial outflows for insurers for life and non-life business, as well as necessary premium changes for business continuity.

Examples of physical risk indicators used by insurers are the annual average loss (AAL) and probable maximum loss (PML) metrics.

The AAL is commonly used to estimate the average expected loss in any year due to catastrophic events like floods or storms. The basic formula for the AAL is:

$$AAL = \sum (P_i \times L_i)$$

Where:

P_i = Probability of a particular event occurring in a given year (eg a flood of a certain severity), and

L_i = Losses associated with that event if it occurs (eg the cost of damage from the flood).

The PML is commonly used to estimate the worst loss at different return periods (eg 1 in 100) from catastrophic events like floods or storms. The basic formula for the PML is:

$$F(L) = \text{Probability}(l \leq L)$$

$$PML(1 \text{ in } 100) = F^{-1}(0.99)$$

Where:

Asset and underwriting risks $F(L)$ is the cumulative distribution of losses (l), ie the probability that the maximum loss from an event in a given year will be less than L . The PML at a defined return period (eg 1 in 100) is then the largest loss that one could expect at the defined percentile (eg 99th percentile).

Asset risks

Asset-specific risk assessments: evaluating the susceptibility of individual assets, asset categories (eg equities, corporate or sovereign debt) and/or economic sectors to climate-related risks (eg real estate exposure).

Examples of transition risk indicators

These focus on the risks associated with the transition to a low-carbon economy. Key indicators may include:

Asset and underwriting risks

- Legal and regulatory risks: assessing the potential for litigation or regulatory penalties associated with the transition;
- Exposure to high-carbon industries: assessing the proportion of the investment portfolio (eg long-term bonds) or underwriting activities (eg financed emissions) linked to fossil fuels or other high-carbon sectors;
- Different scenarios: analysing the potential impact of various transition risk scenarios (eg orderly transition versus delayed response) on insurance liabilities and investments, particularly those in carbon-intensive industries, as well as the sensitivity of impacts to different carbon prices; and
- Technological developments: for example, projected financial impact of technological improvements or innovations and shifts in supply and demand for certain commodities, products, and services: estimating how these changes might occur under different transition scenarios and how they may affect financial outflows for insurers for life and non-life business.

Asset risks

- CO₂e emissions⁵ footprint or intensity of investments: measuring the current and forecast GHG emissions (absolute or intensity) associated with an insurer's investment portfolio;
- Portfolio alignment indicators, such as alignment to the Paris Agreement, which may be relevant in some jurisdictions especially where this transition is embedded in statutory provisions;
- Stranded asset risk: evaluating unforeseen loss of asset value due to abrupt changes in market dynamics, regulation or technological advancements; and

⁵ The Intergovernmental Panel on Climate Change describes CO₂e as: "The amount of carbon dioxide (CO₂) emission that would cause the same integrated radiative forcing or temperature change, over a given time horizon, as an emitted amount of a greenhouse gas (GHG) or a mixture of GHGs... Water vapour (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and ozone (O₃) are the primary GHGs in the Earth's atmosphere".

Investments in climate resilience: measuring the extent of investments in climate adaptation, as well as the adequacy of portfolio companies' capital expenditure on adaptation measures.

Examples of climate scenario metrics

Asset-related indicators (impact of transitional only, physical only and both)

- Credit ratings by sector and region;
- Equity valuation by sector and region;
- Value of real estate that could be uninsurable; and
- Real estate valuation by region.

Underwriting-related indicators

- NatCat losses by peril and region;
- NatCat climate-adjusted premium level by peril and region;
- Proportion of market becoming uninsurable by peril and region;
- Mix of technologies in given sectors (eg electric vs ICE vehicles);
- Expected legal liability claims by region; and
- Life and health reserve strengthening by region and line of business.

Corporate indicators

- Earnings impact by line of business; and
- Capital impact.