



Risk Alert

Climate change scenario analysis

Key message

The financial risks from climate change should be considered within the context of scenarios when referring to, relying on, or performing climate change analysis. Data is evolving rapidly and there is a risk, when using current published scenarios, that an Actuary will underestimate climate risk.

Therefore Actuaries:

- Should ensure that they demonstrate an understanding of the sensitivities, limitations and uncertainties when evaluating climate related financial risks.
- Should refer to the limitations and uncertainties when communicating outputs to users of the information.
- Should consider whether the impacts of a realistic worst-case scenario may be greater than currently anticipated in the standard climate scenarios used in financial services, and if so, communicate this

What are Risk Alerts?

A series of alerts drawing attention to specific issues where the IFoA asks Members (and others) to think carefully about the consequences of actions they are taking or not taking.

The information in the Risk Alert is published to support Members and to protect the public interest. The Risk Alert is not mandatory guidance.

This Alert is relevant for the following Members:

All Members

Subject Matter

In 2022 the IFoA issued a risk alert on climate related risks, with the clear message that climate change drives material financial risks, meaning it is crucial that Actuaries appropriately consider and clearly communicate the impact of climate change in their actuarial work. This risk alert refers specifically to the use of climate change scenario analysis.

Scenario analysis is increasingly used by financial institutions to explore climate related financial risks by exploring different plausible futures. It has evolved rapidly in financial services and there is now an expectation from regulators that it plays a key role in climate related risk management^{1,2,3,4}.

Considerations for actuaries

Climate change scenario analysis is evolving. Data sources are broad in their reach and show high uncertainty. There are challenges and limitations that users of scenario analysis should be aware of when interpreting results.

Actuaries should be aware that the climate may change more quickly than some models predict. Most widely available climate scenarios are not stress scenarios and so may not be suitable for some financial use cases without augmentation or supplementation. Collectively these scenarios risk leading to a systematic underestimation of climate related risks, which may lead to actuaries understating the risks from climate change. Where climate scenarios form part of climate related disclosures, there is a need for users of this information to understand where risks may be understated.

Actuarial principles require consideration of judgements, methodologies and assumptions, particularly where they are material and contribute to limitations or uncertainties, which would apply here.

The objectives of climate change scenario analysis will depend on the purpose for which they are being used. Actuaries should:

1. Ensure the scenarios they are using are appropriate to meet these objectives.
2. Work to understand where the scenarios sit on the distribution of possible outcomes (for example central estimate vs tail scenarios)
3. Explore key assumptions and weaknesses, paying particular attention to key financial exposures.
4. Appropriately communicate the limitations in climate scenarios to decision makers so that results are interpreted accordingly.

¹ April 2019 PRA [SS3/19](#) “Firms should use scenario analysis and stress testing to inform the risk identification process and understand the short- and long-term financial risks to their business model from climate change.”

² April 2021 EIOPA [Opinion on the supervision of the use of climate change risk scenarios in ORSA](#) “Competent authorities should also expect undertakings to assess the long-term risks of climate change using scenario analysis to inform the strategic planning and business strategy”

³ October 2021 PRA [Climate Change Adaptation Report 2021](#) “more progress is needed, especially with respect to firms’ risk management and scenario analysis capabilities.”

⁴ March 2023 [Bank of England report on climate-related risks and the regulatory capital framework](#) “The unique characteristics of climate risks mean that their capture by capital frameworks requires a more forward-looking approach than used for many other risks. Scenario analysis and stress testing will play a key role in this.”

5. Do their best to make sure that if results are communicated beyond their advice that these limitations are not lost in translation.

Actuaries are well placed to support improvement of the scenario analysis landscape, including exploring tail risks and using narratives and discussion to explore the likelihood and impact of outcomes beyond what has been modelled. Qualitative scenario analysis may be more appropriate where there is high uncertainty, complexity and interactions between risks (examples are provided under further information).

Professional obligations

Members are reminded of their obligations under the Actuaries' Code ('the Code'), Actuarial Profession Standards (APs) and the Technical Actuarial Standards (TASs) issued by the Financial Reporting Council.

Further information and support

- Members with specific professional questions or concerns should send those to the regulation team at regulation@actuaries.org.uk. Members can also get support on ethical or technical issues through the Professional Support Service.
- For an example of qualitative scenario analysis see: No Time To Lose; New Scenario Narratives for Action on Climate Change <https://greenfuturessolutions.com/wp-content/uploads/2023/09/No-Time-To-Lose-New-Scenario-Narratives-for-Action-on-Climate-Change-Full-Report.pdf>
- Baer, M., Gasparini, M., Lancaster, R., Ranger, N. (2023). Toward a framework for assessing and using current climate risk scenarios within financial decisions. UK Centre for Greening Finance and Investment (CGFI). Discussion Paper. <https://www.cgfi.ac.uk/wp-content/uploads/2023/03/CGFI-Scenario-paper.pdf>
- Trust, S., Bettis, O., Saye, L., Bedenham, G., Lenton, T., Abrams, J., Kemp, L. (2024). 'Climate Scorpion – the sting is in the tail. Introducing Planetary Solvency'. Considers the current trajectory of global warming and the possibility that Earth's climate may be more sensitive to elevated concentrations of greenhouse gases than we thought. <https://actuaries.org.uk/media/g1qevrfa/climate-scorpion.pdf>
- Trust, S., Joshi, S., Lenton, T., Oliver, J. (2023). "The Emperor's New Climate Scenarios" Limitations and assumptions of commonly used climate-change scenarios in financial services. <https://actuaries.org.uk/media/qeydewmk/the-emperor-s-new-climate-scenarios.pdf>
- Trust, S., Saye, L., King, D., Patel, R., Martin, A. (2022) Climate Emergency – tipping the odds in our favour, A climate-change policy briefing for COP27 [climate-emergency.pdf \(actuaries.org.uk\)](https://actuaries.org.uk/media/qeydewmk/the-emperor-s-new-climate-scenarios.pdf)

- CPD Reflective Practice Discussion (RPD) Toolkit on Climate change and sustainability: intended to be used in a Reflective Practice Discussion as part of the reflective process in identifying learning objectives and considering how those can be met through activities and other learning opportunities.
- Sustainability and Climate Risk course: this will introduce the main concepts of climate risk and sustainability that are relevant to actuaries, what impact they might have on actuarial work and how to apply these concepts.
- A climate change curated library
- Sustainability Board practical guides
- The IFoA's regulatory commitments, including developing guidance for Members on this topic