

## EIOPA CONSULTATION

# Application guidance on running climate change materiality assessment and using climate change scenarios in the ORSA

Highlights and implications for the insurance sector

Maarten Ruissaard  
Maayke de Boer



On 10 December 2021 the European Insurance and Occupational Pensions Authority (EIOPA) published a consultation on the application guidance on running climate change materiality assessments and using climate change scenarios in the Own Risk and Solvency Assessment (ORSA).<sup>1</sup> This consultation is a follow-up from EIOPA's Opinion published in April 2021 and aims to provide guidance on the use of climate change scenarios in the ORSA.

Below we highlight the most important proposed guidance and its implications for insurers.

Under Solvency II all insurance and reinsurance undertakings are obliged to perform an annual ORSA. In this assessment the undertaking should include all risks to which it is exposed. Although climate change risk can have a material impact, currently only a small number of undertakings have included this risk in their ORSA, and EIOPA concludes their approaches diverge substantially. Therefore, EIOPA has decided to elaborate on the application guidance for performing a materiality assessment and defining and running climate risk scenarios.

EIOPA stipulates that its application guidance is not binding and is meant as an initial aid for undertakings to include climate change risk in their ORSAs. Hence, undertakings should not limit themselves to the aspects included in the consultation paper.

## Proposed guidance on inclusion of climate change risk in ORSA

According to EIOPA climate change risk can translate into two types of risks:

- **Physical risk:** Risks that arise from the physical effects of climate change. These risks can be both acute and chronic. Potential consequences can be:
  - More extreme weather resulting in more damages (non-life insurance)
  - New diseases resulting in pandemics (health insurance) and changing life expectancy (life insurance)
- **Transition risk:** Risks that arise from a rapid transition to a low-carbon and climate-resilient economy. This type of risk can have major impacts on the market value of assets but also on the liabilities of the undertaking, for example due to increasing expense because of litigation or regulation changes.

It can be useful to acknowledge this distinction and assess their impacts individually on the short, medium and long term.

### MATERIALITY ASSESSMENT

Competent Authorities<sup>2</sup> (CAs) should expect undertakings to identify material climate change risks. Undertakings that conclude that climate change is not a material risk need to argue how their conclusion is reached. Therefore, all insurance undertakings should assess how climate change risks affect their business.

The process starts with conducting a materiality assessment. This is done in several steps:

1. Defining the context in which the undertaking may be exposed to climate change risks
2. Researching the possible impacts of climate change risks on the business
3. Assessing the materiality of each climate change risk to each aspect of the business

<sup>1</sup> EIOPA (10 December 2021). EIOPA consults on the application guidance on climate change risk scenarios in the ORSA. News release. Retrieved 23 December 2021 from [https://www.eiopa.europa.eu/media/news/eiopa-consults-application-guidance-climate-change-risk-scenarios-orsa\\_en](https://www.eiopa.europa.eu/media/news/eiopa-consults-application-guidance-climate-change-risk-scenarios-orsa_en).

<sup>2</sup> National supervisors.

Climate change can affect both sides of the balance sheet as well as the Solvency Capital Requirement. The technical provisions of a non-life insurer may for example be affected through an increase in the claim frequency (chronic) or severity (acute) due to more extreme weather.

### Time horizon

When researching climate change risks, undertakings should also determine the appropriate time horizons to take into account. From a climate change point of view, the time horizon to consider tends to be much longer than the usual horizon of other business. Hence, the time horizon that should be considered for climate change risks is likely to be longer than the horizons that are currently considered in the ORSA of the undertaking. However, the short and medium term should not be neglected as some climate change risks can already have an impact in the short term.

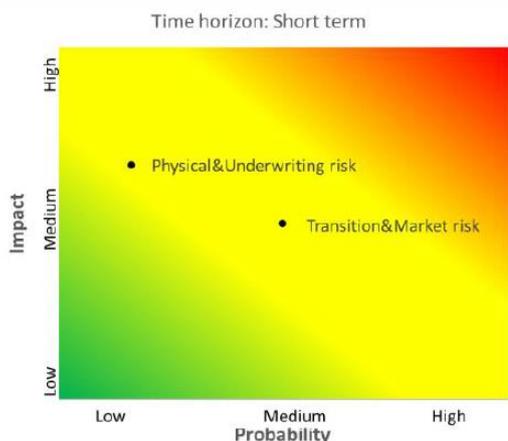
### Materiality assessment matrix

To assess the materiality of risks, there are three dimensions to consider:

- The impact of the risk
- The probability of the risk
- The time horizon that is considered

These dimensions are related and should be assessed together. That is, the impact of climate change and the probability that it will happen differ per time horizon. To map the risks to their probability and impact for each time horizon, materiality matrices can be used; see Figure 1 for an example. From such a graphical representation it is immediately clear for each time horizon what the probability of a certain risk is and what the possible impact would be if the risk would take place.

**FIGURE 1: EXAMPLE MATERIALITY MATRIX FOR THE SHORT TIME HORIZON.**



Source: Figure 5 of EIOPA - Consultation paper on application guidance on using climate change scenarios in the ORSA.

## CLIMATE CHANGE SCENARIOS

It is expected of undertakings to also run climate change scenarios to assess the impact of material climate change risks on their business. Where appropriate, at least two long-term scenarios should be considered:

- A scenario in which global warming is limited to at most 2°C, but preferably to 1.5°C, which is in line with EU commitments
- A scenario in which the global temperature increase exceeds 2°C

Different scenarios can be defined for different types of risk. This can for example be done by the following steps:

1. Defining relevant climate change scenarios
2. Transforming the scenarios into climate change risks
3. Assessing the financial impact of the risks

As with the assessment of materiality, different scenarios can be defined for transition and physical risks.

### Transition risk scenarios

To formulate scenarios for transition risks, insurers need to think about the high-level scenario needs, such as for example the transition trends. Various modelling agencies, such as the International Energy Agency (IEA), have provided scenarios that can be used for this purpose. Then set the parameters that define the scenario, such as:

- Macroeconomic trends
- Market prices
- Legal and reputational parameters

Thereafter, the scenario ambition is chosen. An example of an ambition for climate change is "soft decarbonisation" in which the aim is to limit global warming to at most 3°C to 4°C. Based on this ambition we can assign probabilities to different levels of global warming. Finally, the "speed of disruptiveness" or the "nonlinearity of the transition" should be determined. The paper makes reference to studies providing guidance on scenarios and associated predefined parameters. However, EIOPA mentions that predefined parameters may not be applicable to each insurer, given that scenarios are often company-specific.

### Physical risk scenarios

The Intergovernmental Panel on Climate Change (IPCC) has set up two types of scenarios or pathways for physical risks:

- The Representative Concentration Pathways (RCPs): Each of the pathways entails a different future scenario with, for example, the level of greenhouse gasses and other radiative forcings. The pathways are projections of the development of radiative forcings up until the year 2100.
- The Shared Socioeconomic Pathways (SSPs): Each of these pathways represents a way in which the world might evolve in the coming century in terms of socioeconomic factors.

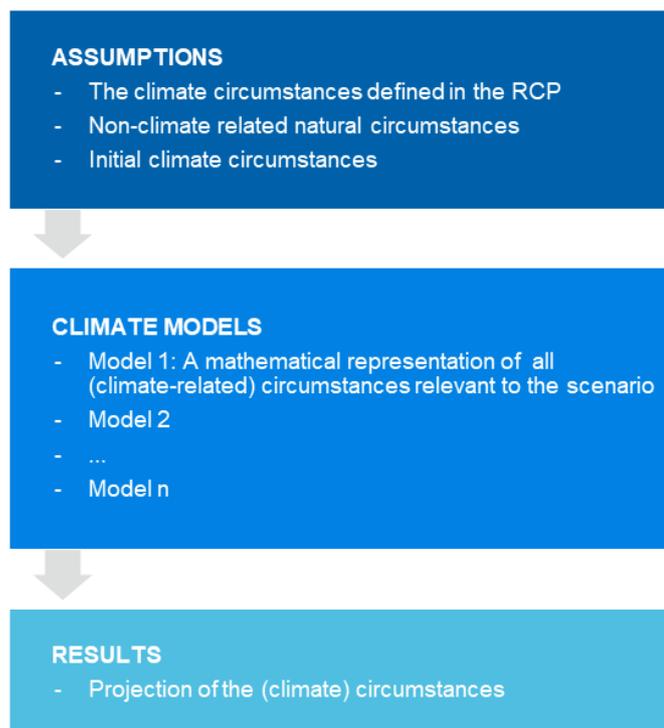
These pathways are designed to complement each other. The RCPs illustrate how global warming may develop until the end of the century and the SSPs represent the socioeconomic circumstances in which climate ambitions may or may not be realised.

### FROM SCENARIOS TO CLIMATE CHANGE RISKS

Each scenario may entail different (levels of) climate change risks. For example, transitioning away from fossil fuels will require an enormous energy transition, which will have an impact on all companies' revenues and expenses. For physical risks, each pathway leads to a different climate system in the future.

The impact of these climate systems on the business of a given undertaking can be computed using general circulation models (GCMs). A GCM is a type of climate model in which a certain climate system is transformed into a numerical representation of the Earth's atmosphere or oceans. The working of a GCM is illustrated in Figure 2. Currently, these models are mainly used for climate research and weather forecasting. However, GCMs can also be used to simulate different pathways and assess the impact of the pathway on the undertaking's business.

FIGURE 2: ILLUSTRATION OF THE PROCESS AND BUILDING BLOCKS OF A GCM.



Given the long-term nature of the scenarios it is likely insurers will formulate management actions to keep the outcomes realistic. These management actions can entail for example changing tariffs or adapting the risk mitigation techniques. However, it should be noted that, although management actions can help with risk mitigation, the downward risk of these actions should also be taken into account.

## Implications for insurers

Running such complex models, with a great variety of different scenarios to consider (pathways x time horizons), implies a deep knowledge of climate risk impacts on insurance portfolios.

Of course, as stated in the EIOPA Opinion, all these scenarios should not necessarily be run on an annual basis. The ORSA process gives space to test a different scenario each year. Besides, it is possible to start from scratch and to enhance models in a more realistic fashion every year. Yet it will represent a good deal of work and expertise for insurers to comply with these new regulatory expectations.

The good news is that such models would prove useful tools for insurers in order to manage their risks. Sensitivities of climate risk scenarios to different management actions would help them to take the right underwriting decisions (pricing, geographic and sectorial risk selection, tailor-made warranties etc.) as well as investment strategies. It will also be useful to select risk mitigation techniques that prove more resilient to climate change.

Note that, for Dutch insurers, it is already expected by the local supervisor De Nederlandsche Bank (DNB) that climate change risk is explicitly included in the ORSA. The DNB's expectations are laid out in a Good Practice and Q&A, while in 2020 and 2021 thematic research has been performed towards the incorporation of climate change risk in ORSAs of Dutch insurers.<sup>3</sup>

## Conclusions

EIOPA has provided initial guidance for insurance undertakings to include climate change risk in their ORSA. Guidance is provided on how to determine the climate change risks to which a business is exposed and how to assess whether these risks are material. For material risks, methods have been proposed to analyse the impact of these risks on the business of the undertaking. This materiality should be researched for different time horizons.

<sup>3</sup> DNB (5 November 2021). The Impact of Climate Risk on Insurers. Retrieved 23 December 2021 from <https://www.dnb.nl/actueel/nieuws-voor-de-sector/sector-nieuwsberichten-2021/de-impact-van-klimaatrisico-s-op-verzekeraars/>.

All in all, it has been shown that all insurance undertakings need to consider climate change and the risks it can pose to their business, either to confirm the risks are not material or to assess the impact of the risks on the business. The guidance will help undertakings include climate change risks in their ORSAs by providing more direction for the assessment of these risks.

Input from stakeholders on the consultation can be shared until 10 February 2022.

#### FURTHER READING

Aside from this note, Milliman has already produced several other readings relevant to this topic.

- For a summary of EIOPA's opinion on the supervision of the use of climate risk scenarios in ORSA, you can read our paper [here](#).
- For more guidance about how to include climate change within the ORSA, you can read our detailed paper [here](#).
- For more information on risk metrics to use for climate change risk, you can read our detailed paper [here](#).

## How Milliman can help

Milliman can help you with various aspects of considering climate change risk in your business.

We can for example provide advice on Including climate change risk in your ORSA:

- Determining sources and types of climate change risk exposure
- Judging the materiality of climate change risk for your business
- Modelling climate change risk (for example with GCMs)
- Reporting on climate change risk reporting and setting relevant key risk indicators (KRIs)
- Best practices of analysing climate change risk

For further information, please contact your local Milliman consultant.



Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

[milliman.com](http://milliman.com)

#### CONTACT

Maarten Ruissaard  
[maarten.ruissaard@milliman.com](mailto:maarten.ruissaard@milliman.com)

Maayke de Boer  
[maayke.deboer@milliman.com](mailto:maayke.deboer@milliman.com)