CLIMATE CHANGE: A NEW ERA IN RISK MANAGEMENT AND MODELLING

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Insurance companies play a vital role in both the business landscape and society. With the world facing the unprecedented challenges of climate change, how can insurers lead the way in managing and mitigating the risks – and encourage others to follow suit?

Insurers as investment influencers

There are many areas where insurers can wield their influence to make a positive impact on climate change. One of the most significant is through their investment strategy.

Insurance companies held $28 trillion in assets at the end of 2019.[1] This represents a significant proportion of all investible assets globally, making insurers a hugely important group of institutional investors. As such, the sector has the power and the responsibility to divert more of its investments into ethical and sustainable assets – and to raise awareness and effect change in the companies it invests in.

In turn, insurers can help reduce their own "transition risk", which will arise from continuing to invest in businesses that rely on fossil fuels or are carbon intensive. As we transition to a low-carbon economy, the underlying assets of these businesses (such as oil reserves or fossil fuel power stations) will become "stranded" and lose much or all of their value, with corresponding effects on the value of the stock or bonds of the business.

The speed at which those investment values fall depends on government policy, consumer behaviour and investor sentiment, and whether the companies involved pivot to cleaner or renewable energy. But overall, investing in carbon-intensive companies exposes insurers to very real transition risks.

Consumer preferences have been shifting towards sustainable investments. In the future, this may become the default investment strategy.[2] As a result, failing to invest sustainably may decrease business for insurers, as consumers move to companies that better align with their values.

Conversely, doing the right thing in this regard may open up new opportunities for insurers to win market share, grow their business and attract and retain talent.

Encouraging net zero

Insurers can use their position as large institutional investors to influence investee companies in high-carbon industries. The end goal would be for these firms to put in place a robust climate strategy with clearly defined, realistic and measurable targets and a concrete goal for reaching net zero.

This approach will support an insurer's own net-zero strategy, which should take into consideration the emissions of its value chain and help it meet its obligations under emerging disclosure standards.

Another positive action that insurers can take on climate change is to stop or reduce underwriting and associated exposure to carbon-intensive sectors such as oil and gas exploration and extraction.

As with investments, insurers may also try to influence companies they underwrite to reduce their emissions. This strategy may be considered more sustainable in a wider sense, as withdrawing insurance from a carbon-intensive business may have serious effects on the communities that it supports, i.e. the "social" aspect of ESG.

AIA[3] and L&G[4] are just two examples of insurers that are actively decarbonizing their portfolios. While this will help shift their portfolios to more sustainable investments, it's also responsible management of the transition risks.

Insurers also can help by reducing the greenhouse gas emissions associated with running their business, committing to their own net-zero targets and reducing their use of water. Additionally, they can start holding their suppliers to the same high standards, as Allianz announced it was doing earlier this year.[5]

[1] https://www.oecd.org
[2] https://www.abi.org.uk
[3] https://fortune.com
[4] https://www.proactiveinvestors.co.uk
[5] https://www.esgtoday.com

Measuring and reporting climate risk

In 2021, natural catastrophes caused an estimated $105 billion of insured losses globally.[6] This figure has climbed rapidly and will continue to do so, given the "baked-in" temperature rises from greenhouse gas emissions to date.

For property and casualty/general insurers, this direct consequence of climate change will push up claims, payouts and premiums. But do insurers really understand how to measure these long-term impacts? We believe not.

Traditional modelling techniques draw heavily on historic data, which climate change will make increasingly less effective as future outcomes diverge more and more from the past. Currently, some insurers may have a much better understanding than others of how this will happen, but it is a relatively new challenge for risk managers – and models are evolving all the time.

In the meantime, climate risk is prompting a raft of regulatory and disclosure requirements.

The International Accounting Standards Boards set up the International Sustainability Standards Board (ISSB)[7] in November 2021 and released two exposure drafts, one covering wider ESG disclosures and the other focused specifically on climate change.

Overall, the ISSB's objective is to provide investors with high-quality, transparent, reliable and comparable metrics on climate and other ESG components. In the U.S., the Securities and Exchange Commission is developing similar disclosure requirements.

In the U.K.[8], the Prudential Regulatory Authority, Bank of England, Financial Conduct Authority and Climate Financial Risk Forum[9] are all looking at introducing new regulatory frameworks for climate risk management.

And globally, the Task Force for Climate-Related Financial Disclosures and insurance regulatory bodies like the European Insurance and Occupational Pension Authority and the National Association of Insurance Commissioners are essentially doing the same and finding ways to integrate climate and sustainability risks and reporting into their supervisory frameworks.

All of these regulatory mandates are still very much under development, but four major trends are already emerging:

1. Standards do not prescribe how companies should incorporate climate strategy into their operations, but instead require them to disclose information about governance, strategy and risk management, as well as metrics and targets. The increased disclosures will drive companies to consider, manage and enhance their performance in key areas.

2. The disclosures are designed to clearly link climate-related information to financial performance and help market participants make better investment, credit and underwriting decisions.

3. There is less emphasis on the effect of the company on the environment. Consideration of both the effect of climate on the business and of business on the climate ("double materiality") would create the clearest incentives for businesses to take a strongly climate-friendly position.

4. The most appropriate quantitative tool for understanding climate risk is scenario testing, which is required under most frameworks if the organization has the capability to carry it out.

[6] https://www.swissre.com
[7] https://www.ifrs.org
[8] https://www.globalcapital.com
[9] https://www.bankofengland.co.uk

Scenario testing frameworks around the world

Scenario testing frameworks for insurers are already in use in some countries, such as France, Singapore and the U.K.

The most common approach is to cover both physical and transition risks, based on scenarios proposed by the Network for Greening the Financial System (NGFS). The Bank of England's climate stress tests provide a good example.

Under the Bank of England's framework, insurers must simulate and project the effects on the balance sheet of three scenarios:

- **Early Action:** transition to a net-zero economy, starting in 2021
- **Late Action:** delaying the start of the transition until 2031 when it is more sudden and disorderly
- **No Additional Action:** introducing no new climate policies beyond those already implemented

The balance sheet impact must be assessed at five-year intervals from 2025 to 2050, based on the current balance sheet. Key outputs for insurers include changes in invested assets and reinsurance recoverables, as well as best estimate liabilities.

Capital requirements are currently out of scope due to their complexity. But given their importance, they are likely to feature in future iterations of the exercise.

Modelling opportunities and challenges

Industry-level parameters associated with each of the Bank of England scenarios will simulate the economic impacts of carbon pricing on different dates and at different levels. By modelling these effects in your ALM models, you can assess the impact of climate change compared to a counterfactual scenario in which climate change has no effect.

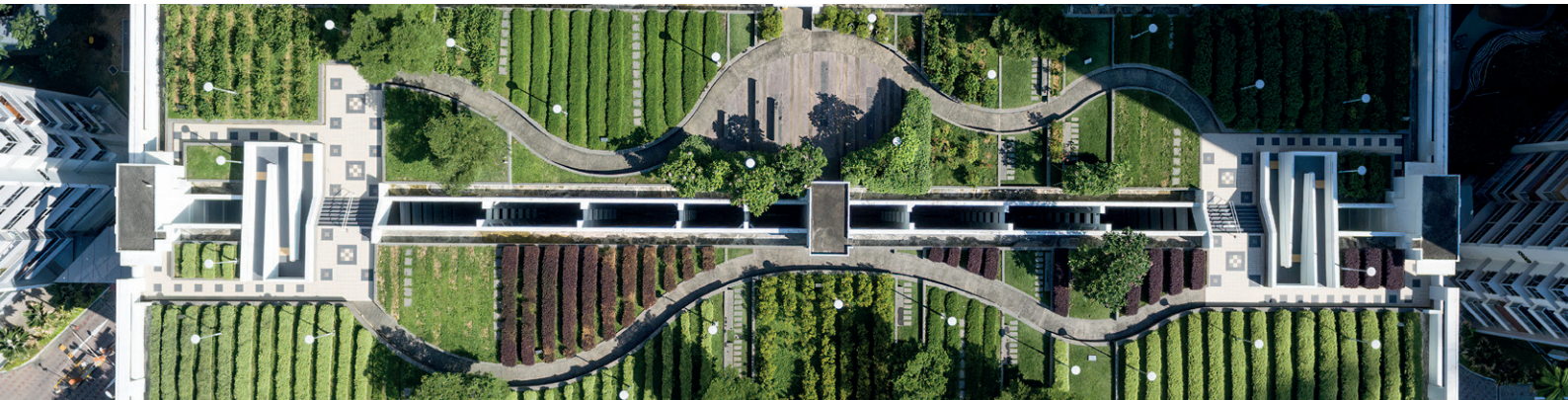
Interestingly, the calibrations imply that economic growth in the first 10 years of the Early Action scenario is only slightly below the counterfactual, and then outstrips the Late Action and No Additional Action scenarios over the remainder of the projection. This challenges the common assumption that good climate policy and economic growth cannot coexist.

Scenario modelling for climate risk poses implementation and operational challenges in terms of:

- **Data** – available scenario information does not often align well with the inputs needed for a standard ALM model:
  - High-level details of the scenario, such as projected carbon prices, need to be converted into equity returns for different economic sectors.
  - The Bank of England provided projections of Gross Value Added for each economic sector, but there is no standard methodology for converting this into economic data such as equity returns or credit spreads required to value assets in the model.
  - For life insurers, the effect of climate risk on mortality and morbidity is not well understood. In many regions, reduced cold-weather deaths will be offset by increased heat-related deaths.

    However, the overall impact is not necessarily zero, especially in regions which already have hot climates. Analysis is difficult as non-climate trends will also be present in historic data, and recent data is severely distorted by the COVID-19 pandemic.
- **Processing power** – insurers will need to run a full ALM model on a number of different scenarios and apply multiple sets of future economic assumptions to the current balance sheet. So, a large number of ALM runs will be required, each with the potential to be relatively onerous if there are options and guarantees which require stochastic modelling.

  A cloud environment can be an efficient and cost-effective solution, as it enables insurers to switch on a large amount processing power for the duration of the production process and then release it when it's no longer needed. Alternatively, proxy modelling may be used to reduce processing requirements, especially if this approach is already in use for other purposes such as capital modelling.
- **Model and results management** – the large number of runs will require careful maintenance of input data and assumption sets. Also, results volumes will be large as the scenario exercise will require reporting of asset values at a highly granular level. It is therefore important that the modelling environment allows insurers to lock down all inputs and models, and store results sets in a structured way for future retrieval.



Interactions and wider contexts

It's also important to consider the interaction of climate modelling with other production models. We envisage that climate scenario exercises will soon require the recalculation of solvency metrics under each scenario. As management of climate risks becomes more embedded in the organization, it is likely that management will want to understand the effect on other metrics such as those used in IFRS 17 or LDTI.

Any production model will therefore need to be integrated into the climate framework for running under multiple climate scenarios. This requires insurers to base all their models on flexible and reusable components so they can efficiently roll out climate developments across them.

A climate scenario model also provides a ready-made solution to climate risk management for the purposes of an own risk and solvency assessment (ORSA), assuming the company assesses its climate risk as material. The main change required would be to identify suitable scenarios for the ORSA, which should be selected based on the company's own risk profile and hence could be different to any of the standard scenarios.

Regardless of the purpose, it is important to consider the relevance and appropriateness of a set of climate scenarios before applying them. For instance, global economic and political conditions have changed dramatically since the Bank of England scenarios were released.

Today's scenarios would need to consider the effects of the war in Ukraine, policy responses to energy security issues and indeed the possibility of governments putting together a coordinated climate response. The associated economic data would also need to be recalibrated to take into account much higher interest rates and inflation.

For insurers using FIS® Asset Liability Strategy solution, we are adding a comprehensive example climate risk model using the NGFS approach detailed above and Bank of England parameters from the 2021 exercise. Although the example is based on U.K. climate stress test parameters, incorporation of the NGFS approach provides a strong framework for use in all countries and will help our clients take their first steps toward modelling climate risk.

Are you ready to manage and model climate risk?

The time is now for insurance companies to start acting on climate risk. By doing nothing at this stage, firms will put their reputations at significant risk and lose valuable opportunities to use their influence as a force for good. Also, understanding and managing the risks and making a positive impact on climate change is clearly the right thing to do for our planet's future.

In the shorter term, there are the new regulations to consider too. Specifically, a range of operational challenges for scenario modelling needs to be considered as well. Again, time is of the essence, and it will pay to start preparing right away.

FIS has the expertise and the tools to help. Get in touch with us at getinfo@fisglobal.com to find out more.

About FIS

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