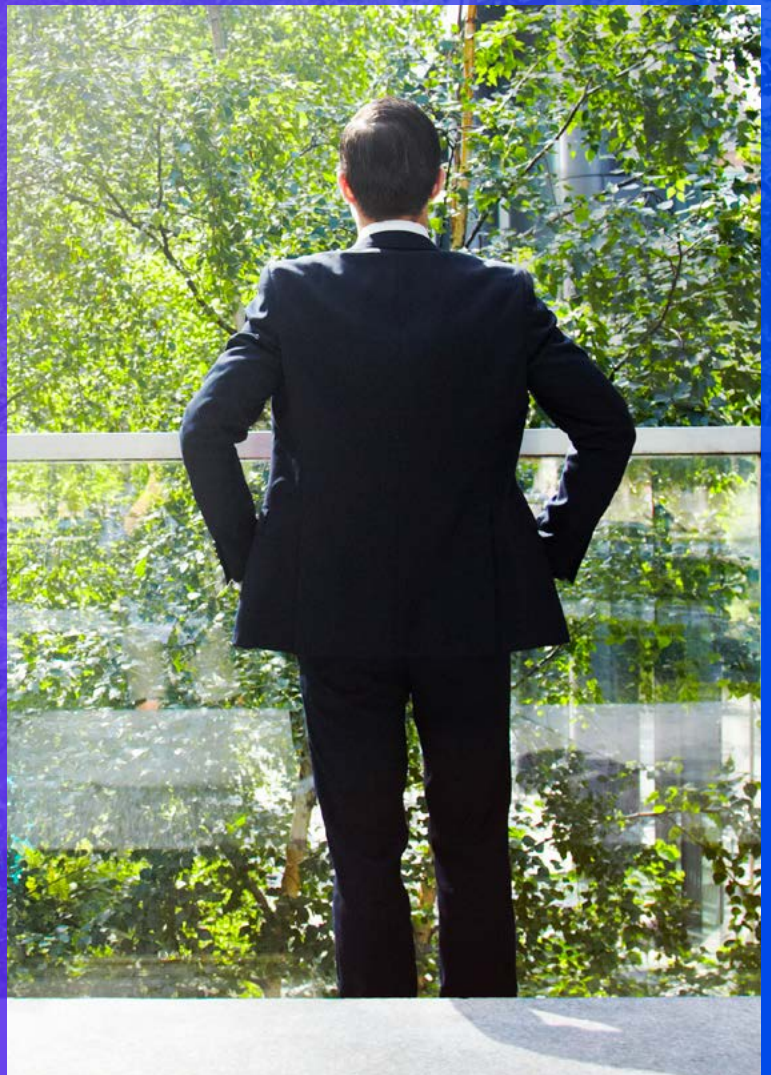




Climate scenario analysis

Enhancements for
banks & financial institutions



Part 1: Scenario generation
May 2023

Climate scenario analysis: enhancements for banks & financial institutions

Significant progress has been made over the last five years in the field of climate scenario analysis for banks and financial institutions, from early TCFD disclosures to developments by the PRA and ECB climate stress tests. In this three-part series on climate scenario analysis, we examine the key focus areas where firms and supervisors expect further enhancements to banks and other financial institutions' end-to-end climate risk scenario analysis models.

Climate scenario analysis has been a key area of capability development by banks, driven by increasing global regulations (see Figure 1) and its value as a climate risk management tool. As recognised by TCFD and other climate-related disclosure regulations, it can help firms better understand and manage their physical and transition risks, identify opportunities, inform strategy and build resilience on the journey to net zero.

There are three main stages to climate scenario analysis, which we will explore as part of our trilogy of articles on this topic:

- Part 1: scenario generation
- Part 2: impact quantification
- Part 3: response evaluation

This article shines a spotlight on scenario generation.

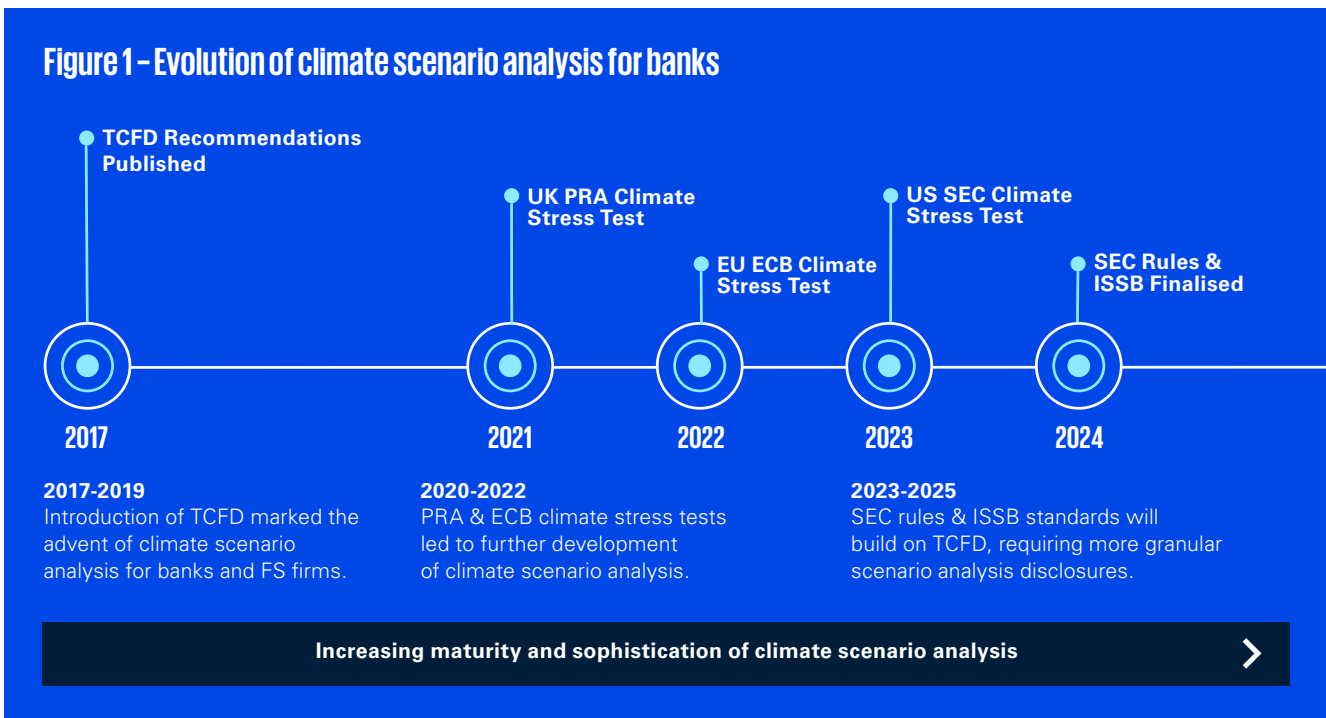


Table 1 outlines eight key focus areas that leading banks and other financial services providers expect climate risk scenario analysis models to address over the next couple of years. These are based on KPMG's review of the main gaps and recommendations identified in the UNEPFI report on the 2023 Climate Risk Landscape (March 2023), as well as our own insights and findings from the ECB 2022 thematic review on climate-related and environmental risks (November 2022) and PRA Dear CEO letter (October 2022).

The need for more sophisticated and customisable climate scenarios

We focus on scenario generation in this article, as the first stage in the scenario analysis process – and one where we are seeing growing interest from banks and other financial services providers. Firms are seeking to generate richer, customised scenarios by widening the scope of scenarios (enhancement 1.1) to cover a range of time horizons, integrating physical and transition risk assessments into scenarios (enhancement 1.3) and expanding macro-economic detail of scenarios (enhancement 1.4).

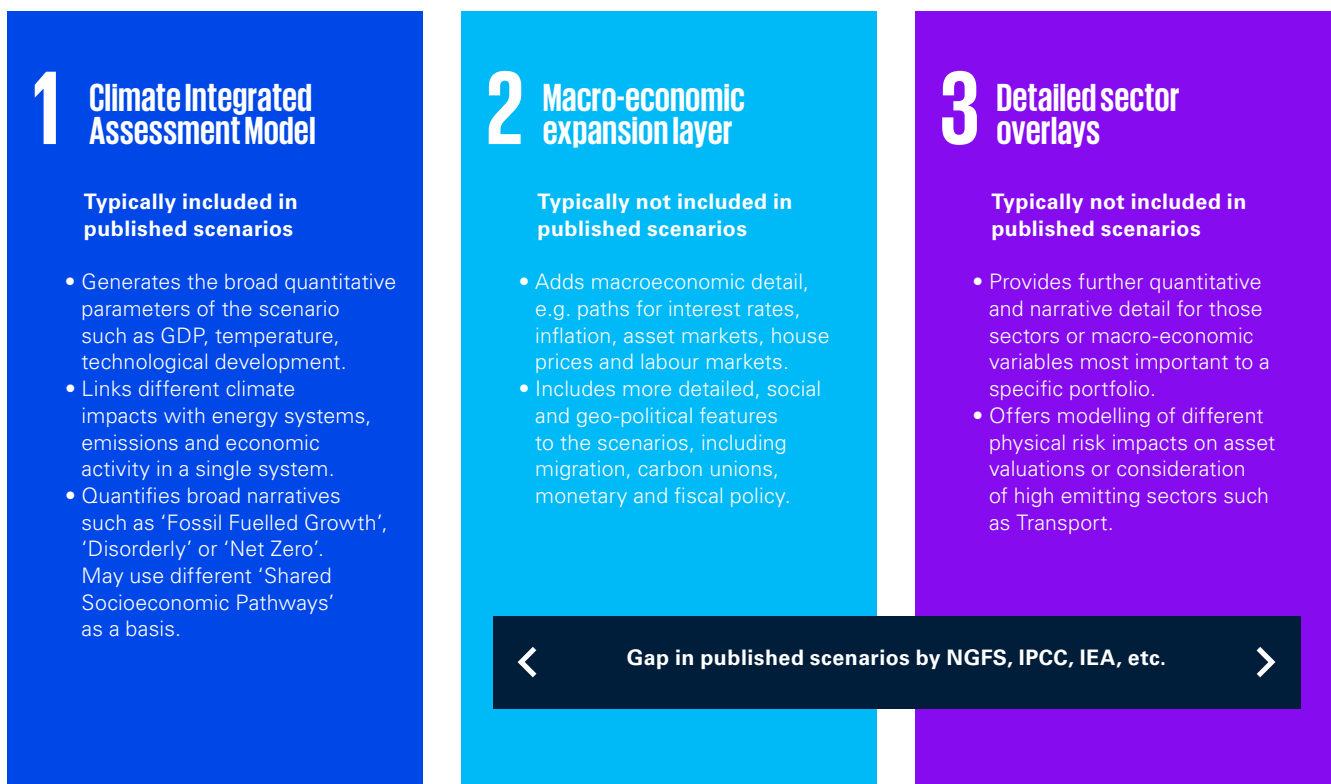
This interest is partially driven by more stringent scenario analysis and quantitative disclosure expectations in new regulations such as the ISSB’s climate-related disclosures, along with wider adoption and further development of TCFD. It is also being driven by firms wanting to better integrate climate scenario analysis into their strategic and business planning process. Firms are increasingly viewing scenario analysis as a valuable opportunity identification tool to inform commercial decision-making, rather than just a risk management tool to meet perfunctory regulatory requirements. To capitalise on this, firms need to create more sophisticated scenarios, which relate specifically to their own business and operating environment.

Challenges of developing customised climate scenarios

The NGFS (Network of Central Banks and Supervisors for Greening the Financial System), IPCC (Intergovernmental Panel on Climate Change), central banks and other regulatory authorities have adopted Integrated Assessment Models (IAMs), usually with a basis in the field of climate research. These include GCAM, REMIND-MAgPIE and MESSAGEix-GLOBIOM – all of which link energy systems with economic activity and global temperature outcomes, with varying degrees of emphasis on land use and range of ‘feedback’ effects considered. These generally have relatively reduced-form economic models, which generate useful parameters for a range of climate scenarios.

The outputs of these models provide a solid foundation for firms to build on to create their own climate scenarios. However, more sophisticated users such as banks invariably need to undertake significant work to expand the macro-economic detail required to fully quantify the impact of climate risks on those sectors and regions most applicable to them. This is shown in Figure 2 below, which breaks down the best practice process of generating sophisticated, firm-specific transition risk scenarios into three key steps.

Figure 2 – Climate scenario generation process





Addressing the challenge

Although most banks and other financial institutions have well-developed macro-economic projection models and frameworks, many lack the capability to generate sophisticated climate scenarios 'in-house'. This includes limited ability to extract sufficient detail and data granularity for specific sectors for the scenarios published by the NGFS, IPCC and IEA.

The ideal solution to this challenge would be a suite of models covering all three steps shown in Figure 2. This would enable firms to match published scenarios, using steps 2 and 3 in Figure 2 as an expansion tool to add further granularity. Alternatively, firms could deploy the entire suite to provide fully customised counterfactuals or alternative assumptions on technology, demographics, economic growth, policy or adaptation.

Having a sophisticated global climate model of this type has two significant benefits:

1. Enables a rich set of scenario narratives to be explored and customised, since users have full access to the parameters and levers within the model.
2. Generates more detailed sector and country-level views than public climate models, revealing insights that are unavailable from more simplistic treatments of climate-sector links.

Our solution

KPMG's Climate IQ scenario analysis tool addresses these challenges with a modular, end-to-end climate scenario modelling suite, mirroring the three steps outlined above. This enables the production of a huge array of bespoke climate scenarios covering more than 65 sectors across 141 countries in high resolution. This allows the full spectrum of potential macro-economic, transition and physical risk impacts to be explored and quantified.

Taking into account firms' varying levels of climate modelling maturity and capabilities, Climate IQ can be deployed to provide users with a comprehensive solution for generating customisable scenarios, or to fill gaps in existing data and modelling frameworks.

Climate IQ's proprietary Integrated Assessment Model (IAM) comprehensively links different climate pathways with energy systems and a sector-by-sector treatment of the economy – sharing a similar level of functionality and intellectual pedigree to the IAMs used by the NGFS, IPCC and other authorities.

Climate IQ not only enables rich scenario generation, with detailed sector and country-level overlays, (enhancements 1.1, 1.3 and 1.4), but also offers full transparency, expert support and detailed documentation (enhancement 3.3) to help firms select the best scenarios for their business.

Setting you up for scenario success

Climate scenario analysis has the potential to deliver real strategic value for banks and financial institutions, particularly in relation to opportunities identification – from refining product offerings and revealing new markets, to highlighting cost savings and efficiencies. Getting this first stage of the process right, through sophisticated scenario generation, is critical to setting firms up for success in the subsequent stages of impact quantification and response evaluation.

Lastly, developing rich, customised scenarios that are tailored to the organisation in question also helps to increase engagement from a wide range of stakeholders, including frontline business units. This internal buy-in is critical to embedding scenario analysis into business planning and realising its full potential as more than just a risk management tool.

Climate IQ for banks & other financial institutions

KPMG's Climate IQ tool uses sophisticated economic and financial modelling that has been Independently reviewed by the University College London and the London School of Economics, combined with granular physical risk assessments, to quantify the credit risk impacts (PD & LGD), under highly customisable climate scenarios, on the following lending portfolios:

- Corporate loans
- Residential mortgages
- Commercial real estate
- Motor finance

Climate IQ is supplied with detailed model documentation to facilitate independent model validation, in line with the US Fed and OCC SR11/7 guidance on model governance.



Find out more

In our next article we will focus on stage two of the climate scenario analysis process: impact quantification.

If you would like to discuss this topic further, please feel free to contact us. You can also view further relevant content on our website.

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