European Risk Management Council

Risk Landscape Review

September 2021

- Helping Financial Institutions with Climate-Related Scenarios
- In a World of Risk, Pace Comes from Preparation

DEAR READER,

I am delighted to present Q3 2021 edition of the Risk Landscape Review.

In Q3 2021, European Risk Management Council continues focusing on climate change risk and sustainability. This month, we held the second meeting of the Sustainability Think Tank. The discussion was dedicated to stress testing and scenario analysis for climate change risks.

To continue a conversation about stress testing for the climate change risks, today we publish an article "**Helping Financial Institutions with Climate-Related Scenarios**" by S&P Global Sustainable1. The article discusses challenges that financial institutions face in preparing and running stress tests for climate change risk and how these issues could be solved.

The Q3 2021 edition also includes an article "**In a world of risk, pace comes from preparation**" written by Dr Christian Pedersen, Head of Risk, Accenture, Growth Markets. In the article, Dr Pedersen describes main findings of 2021 Global Risk Management Study, a signature piece of research done by Accenture.

My huge thanks to all contributors.
Enjoy the reading.

Yours sincerely,

Dr Evgueni Ivantsov

Chairman of European Risk Management Council

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Helping Financial Institutions with Climate-Related Scenarios

By S&P Global Sustianable1

A sobering new report from the U.N.'s Intergovernmental Panel on Climate Change (IPCC)[1] tells corporations, financial institutions and governments in no uncertain terms: Act with urgency to lower emissions and adapt to the impacts of climate change at a more rapid pace and bigger scale. The need to quickly formulate strategies to move to net zero has never been more important.

There has been a rise in initiatives set out by various regulatory bodies around the world encouraging action to move to a greener economy. Many initiatives include the use of scenario analysis to better understand the potential impacts of climate change on businesses to promote longer-term thinking about risks and opportunities.

To help identify the information needed by investors, lenders and insurance underwriters to appropriately assess and price climate-related risks and opportunities, the Financial Stability Board established an industry-led task force: the Task Force on Climate-related Financial Disclosures (TCFD).[2] TCFD was asked to develop voluntary, consistent climate-related financial disclosures that would be useful to understanding material risks. One of the recommended disclosures focuses on the resilience of an organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario. An organization's disclosure of how its strategies might change to address potential climate-related risks and opportunities is a key step to better understanding the potential implications of climate change on the organization. TCFD recognizes that the use of scenarios in assessing climate-related issues and their potential financial implications is relatively recent, and practices will evolve over time.

Other regional initiatives are underway, like the Bank of England's Climate Biennial Exploratory Scenario (CBES). The CBES is assessing the resilience of banks and insurers to climate-related risks associated with the move to net zero. In the U.S., the Federal Reserve is intensifying its efforts to understand and manage global warming threats to the financial system, establishing a panel focused on financial stability risks and looking into the possibility of climate stress tests for banks.[3]

What is Scenario Analysis?

According to the TCFD,[4] in a world of uncertainty, scenarios explore future alternatives that may significantly alter the basis for business-as-usual assumptions. They are hypothetical constructs, not predictions or sensitivity analyses, and should contribute specific insights that relate to strategic and/or financial implications of climate-related risks and opportunities.

While often used interchangeably with the term scenario analysis, stress testing assesses events having extreme impacts. For example, the Bank of England has said that it needs to make sure that banks and insurance companies are strong enough to withstand another financial crisis, so these organizations are undertaking stress tests to see if they are prepared for the worst. Reverse stress tests go even further by evaluating scenarios and circumstances that would make a business model unworkable.

Some companies have developed their own scenarios; others use those prepared by organizations such as the Network for Greening the Financial System (NGFS). The NGFS partnered with an expert group of climate scientists and economists to design a set of hypothetical scenarios. They provide a

common reference point for understanding how climate change and climate policy and technology trends could evolve in different futures. Each scenario was chosen to show a range of higher and lower risk outcomes.[5] Other scenarios developed by the International Energy Agency (IEA) and the IPCC have long been used by scientists and policy analysts to assess future vulnerability to climate change.

Categories of Climate-Related Risks for Scenario Analysis

There are two types of climate risk: physical and transition. Physical risks refer to either: i) acute physical hazards, such as more frequent and extreme weather events (e.g., storms, hurricanes and floods), or ii) the chronic and longer-term effects of climate change, such as changing weather patterns or sea level rise.

Transition risks, on the other hand, refer to the costs associated with the market, technological, policy, legal and reputational risks associated with adapting to climate change and transitioning to a low-carbon economy. For example:

- Market risks due to reduced demand for higher-carbon products.
- Technological risks due to market disruption from the introduction of energy-efficient alternatives.
- Policy and legal risks due to increased operating costs from government actions to increase the price of carbon.
- Reputational risks due to a loss of stakeholder confidence in company's without a climate strategy.

Thus, transition risks result in expenses, such as those related to the early retirement of assets, while physical risks may threaten a company's physical asset footprint, create disruptions to global supply chain links and amount to costly insurance premiums. There is an interplay between physical and transition risks. The failure to transition to a low-carbon economy increases the likelihood and severity of physical risks by failing to adapt to climate change, while the failure to mitigate physical risks suggests that the market is not transitioning, thus exposing more sensitivity to the rising occurrence of climate-related hazards.[6]

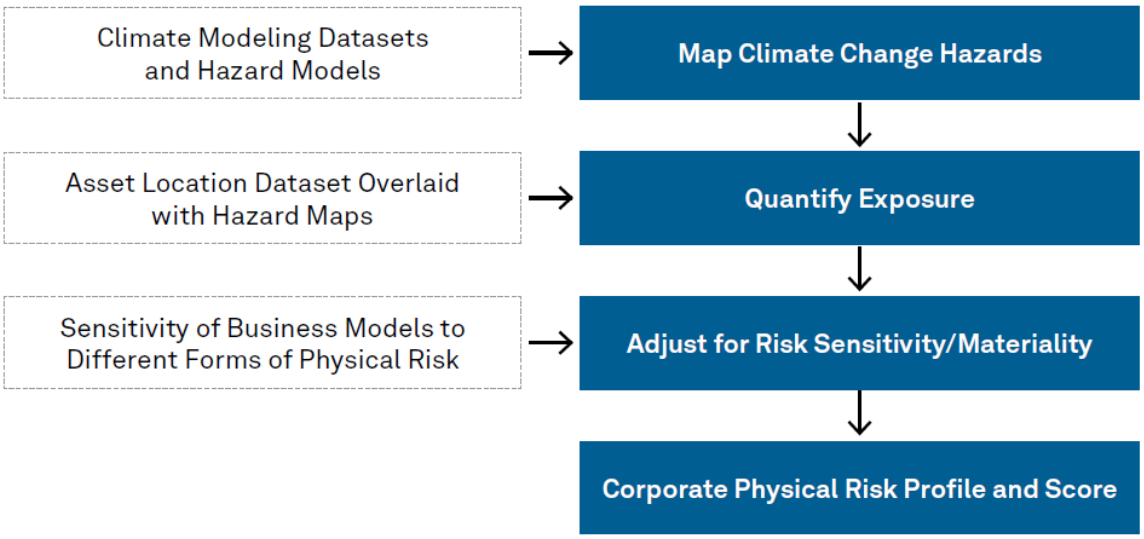
Considerations When Assessing Climate-Related Risks

Data Granularity is of Utmost Importance

To produce an accurate analysis at the individual company level, granular information is needed on a company's fixed assets and emissions across geographies. This is especially important for large companies that often operate in multiple countries. On the physical risk side, there have been more frequent and severe damages from weather-related conditions. In addition, multiple physical risks may affect the same location, yet to a different extent. Climate hazard models must therefore be coupled with location-specific, asset-level data.

S&P Global Trucost's Physical Risk Dataset provides information on 2.8 million asset locations[7] and expertise in mapping corporate ownership structures to parent entities. Granular bottom-up exposures are mapped to forward-looking and science-based climate scenarios — over the short, medium and long term — across seven climate hazards. This includes: floods, water stress, heat waves, cold waves, hurricanes, sea level rise and wildfires (see Exhibit 1). A company's sensitivity to these risks is also based on company-level characteristics, such as water, labour and capital intensity. The result is a rigorous and powerful tool to assess company and portfolio-level physical climate risk exposure for more than 15,000 companies.[8]

Exhibit 1: Trucost's Physical Risk Methodology Schematic



Source: S&P Global Trucost. For illustrative purposes only.

On the transition risk side, the speed of change will depend on what tools governments adopt to facilitate the process. One of the main policy tools is the introduction or increase of a carbon tax, and the impact will depend on the position taken by the country in question. Given this, it may not be enough to apply a flat increase or a global carbon tax across all countries and industries.

Trucost's Carbon Earnings at Risk Dataset can be used to stress test a company's current ability to absorb future carbon prices and understand potential earnings at risk from carbon pricing at a portfolio level. Integral to this analysis is the calculation of the Unpriced Carbon Cost, which is defined as the difference between what a company pays for carbon today and what it may pay at a future date based on its sector and operations and a given policy price scenario.

Company Responses Need to Be Taken Into Account

It is also important to consider the different ways companies may respond. Some may proceed by adopting new, greener technology, while others may keep operating under a business-as-usual stance. In the most extreme cases, governments may limit or ban the use of certain materials, leading to a reduction in company revenues due to asset stranding until alternative approaches are adopted. New technologies may also be devised, affecting overall carbon emissions.

Of course, there will be opportunities in addition to risks. Companies that adapt will incur abatement costs but, on the flip side, will potentially increase their competitiveness and gain market share versus their competitors.

It is obviously important to take a forward-looking approach when assessing company actions. The Trucost Paris Alignment Dataset assesses company-level alignment with the Paris Agreement goal to limit global warming to well below 2°C from pre-industrial levels. The solution encompasses a set of forward-looking analytics to quantify and track energy transition to a low-carbon economy for 14,000 companies globally. This involves a transition pathway assessment, which examines the adequacy of emissions reductions over time in meeting a 2° carbon budget.

Among other applications, financial institutions are using this information to determine which companies and sectors are compatible/incompatible with the Paris Agreement goal and are

better/worse positioned to withstand potential risks as a result of climate change. This is enabling them to craft investment/lending/financing portfolios that can help with the transition to a low-carbon economy.

S&P Global Capabilities to Assist with Scenario Analysis

There are many ways in which S&P Global helps financial institutions assess risks relating to climate change, natural resource constraints and broader environmental, social and governance factors. For financial institutions that have been developing their own models, this includes providing extensive environmental data on over 16,000 companies,[9] covering Scope 1, 2 and 3, in addition to the datasets mentioned above. Exhibit 2 provides a summary of some of the capabilities.

Exhibit 2: S&P Global Trucost Granular Datasets

Dataset	Indicators	Coverage
Trucost Carbon Dataset	• GHG Protocol Scope 1, 2 & 3 Upstream and Downstream • Quantities and intensities of carbon-equivalent emissions (tCO_2e, tCO_2e/US$ revenues) • Estimated damage cost equivalents (US$), along with impact ratios • Sector revenue data that gives revenues and percentages of company revenues derived from each of 464 business sectors • Time series data to 2005	• 15,000+ public companies representing 99% of global market capitalization • 5,000 private companies • Comprehensive coverage of the investment portfolios is provided via granular data modeling*
Trucost Physical Risk Dataset	• Seven climate hazards: sea level rise, flooding, water stress, heat waves, cold waves, hurricanes and wildfires • Three IPCC scenarios (RCP 2.6, 4.5 and 8.5) with projections from a 2020 baseline to 2030 and 2050 to capture both near-term and long-term risk	• > 2.7 million asset locations • > 110,000 public and private companies • Comprehensive coverage of the investment portfolios is provided where the geolocation of company asset locations is available
Trucost Carbon Earnings at Risk Dataset	• Assess financial exposure to > 130 carbon pricing plans alongside future pricing scenarios • Calculation of the Unpriced Carbon Cost	• 16,000+ public companies representing 99% of global market capitalization
Trucost Paris Alignment Dataset	• Assess company-level alignment with the Paris Agreement goal to limit global warming to well below 2°C from pre-industrial levels	• 14,000 public companies representing 98% of global market capitalization • Covers all sectors including Consumer, Energy and Utilities, Financials, Healthcare, Industrials, Materials, Real Estate, Technology and Media & Telecommunications
Trucost Fossil Fuels Dataset	• Understand stranded asset risk from carbon emissions embedded in fossil fuel reserves	• Identifies all the 331 companies within a global 5,000 universe that have any revenues derived from fossil fuel activities; this includes the percentage of revenues companies derive from their business activities in fossil fuel extraction, power generation and clean energy sectors

* The S&P Global Trucost Environmentally-Extended Input-Output (EEIO) Model brings together a vast database of industry-specific environmental impact data with quantitative macroeconomic data on the flow of goods and services between different sectors of the economy. The EEIO model lets users estimate environmental impacts for a company's own operations and across their entire global supply chain, given the availability of company revenue details by industry sector.

Source: S&P Global, data as of July 2021. For illustrative purposes.

[1] "Climate Change 2021: The Physical Science Basis", IPCC, August 6, 2021, www.ipcc.ch/report/sixth-assessment-report-working-group-i/.
[2] "Recommendations of the Task Force on Climate-related Financial Disclosures", as of September 2021 on https://assets.bbhub.io/company/sites/60/2020/10/FINAL-2017-TCFD-Report-11052018.pdf.
[3] "Fed intensifies climate risk focus with new panel, scenario analysis", Reuters, March 23, 2021, www.reuters.com/article/us-usa-fed-brainard-idUKKBN2BF2GQ.
[4] "The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities", on web page as of September 2, 2021, www.tcfdhub.org/scenario-analysis/.
[5] The NGFS climate scenarios were produced in partnership with an academic consortium from the Potsdam Institute for Climate Impact Research (PIK), International Institute for Applied Systems Analysis (IIASA), University of Maryland (UMD), Climate Analytics (CA) and the Swiss Federal Institute of Technology in Zurich (ETHZ).
[6] For more information about the interplay of transition and physical climate risks, please refer to this report: ww.spglobal.com/marketintelligence/en/documents/sp-trucost-interplay-of-transition-and-physical-risk-report-05a.pdf.
[7] As of July 2020.
[8] For more information, please refer to the methodology: www.marketplace.spglobal.com/en/datasets/trucost-physical-risk-(148).
[9] All data as of January 2021.

In a world of risk, pace comes from preparation: 2021 Global Risk Management Study

By Dr Christian Pedersen, Head of Risk, Accenture, Growth Markets

The Global Risk Management Study 2021 marks the seventh edition of this signature piece of research that explores how risk management professionals and their functions are responding to the challenges created by an evolving and disruptive risk space and where emerging and often intertwined threats create new opportunities for forward thinking firms.

For this year's expanded study, we surveyed 725 risk professionals across the globe (Europe, North America, Asia Pacific and the Middle East) and from the Banking, Capital Markets, Comms & Media, Energy, Insurance, Life Sciences, Software and Platforms and Utilities sectors.

Key messages

Key messages on the challenges risk leaders face in responding to their evolving risk landscape:

- 77% of surveyed risk leaders believe that complex, interconnected risks are emerging at a more rapid pace than ever before. In parallel, operational and financial risks rose up the agenda most significantly in the past 12 months.

- Other risk categories frequently mentioned by risk leaders as having risen up the agenda are pandemics and infectious diseases; strategic risks (which encompass a range of threats, from disruptive market entrants with new business models to the emergence of new, game-changing technologies such as crypto-currencies); data and privacy breaches; and risks associated with implementing disruptive technology.

- One area where risk teams are sharpening their focus is climate-change regulation. Although just 49% currently evaluate climate-change-related regulation, a further 41% plan to do so. In parallel, although just 41% incorporate climate change into scenario planning and stress testing, a further 46% intend to do so.

- Despite its growing importance, risk teams trail behind the rest of the business when it comes to deploying new technology: just 46% use cloud technology to process and derive value from data, which is less than teams in the wider business (57%).

- Businesses have accelerated digital-transformation plans in response to the pandemic and broader business challenges, but risk teams lack confidence in assessing risks associated with the technology that underpins them. Only 49% say they are "fully capable" of assessing risks associated with their businesses' adoption of cloud. Even fewer believe they are fully capable of assessing the risks of artificial intelligence (34%), blockchain (32%) and robotic process automation (28%).

- Despite the health and economic challenges of the past 18 months, fewer than a third of risk leaders are “very satisfied” with their progress in bolstering operational resilience in the past two years. Furthermore, fewer than half took vital steps to fortify stress testing, such as expanding the range of scenarios covered or involving more stakeholders.

- The study also finds that risk leaders are confident in their updated crisis-management plans: although 71% of risk leaders say that COVID-19 exposed deficiencies in their ability to respond to crises, 83% have updated their business-continuity plan in the past 12 months and 82% say their business-continuity plan is fit for purpose.

- Eight in ten risk leaders say their teams now spend significantly more time on value-adding activities such as product advisory or evaluating new business models, compared with two years ago. That said, the same proportion struggle to balance this with traditional duties such as reporting.

- Whether it be their use of technology, their understanding of new threats or their participation in growth initiatives, risk teams have made progress in the past two years. But the view from risk leaders themselves that is repeatedly conveyed in our study data is that this is not enough, especially given the increased complexity of risk. And though there are no quick fixes or silver bullets, the report outlines steps risk leaders can take to address the challenges, mitigate emerging threats and give their business more confidence in growth and transformation initiatives.