CLIMATE-RELATED
FINANCIAL RISK IN BANKING

The Looming $4 Trillion Threat

Monocle Research Team

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In its "Global Risks Report 2021", the World Economic Forum listed environmental risk as one of the greatest risks to the global economy, ranking it second only to infectious diseases such as the Coronavirus pandemic.[1] **While the carbon footprint of the financial services industry is relatively small compared to others, banking, insurance and asset management are nonetheless liable for their contribution to "financed emissions" through their investing, lending and insuring activities, which ultimately support carbon-intensive industries such as the energy sector.**

Environmental, social and corporate governance (ESG) has become increasingly pertinent for industries across the globe including energy, transport and agriculture however, the financial services industry is particularly impacted with regard to climate-related financial risk. This has resulted in increased policy and stakeholder pressure on the financial services industry to address its climate impact and manage climate-related financial risks, with policy deadlines in Europe approaching throughout 2021, 2022 and beyond. The practice of climate-change risk management is, however, in its infancy, leaving financial services leaders with difficult decisions to make regarding how to proceed and meet regulatory expectations.

This paper evaluates the current and forthcoming expectations for climate-related financial risk management with specific focus on bank risk management through scenario analysis and stress testing, as well as disclosure and reporting. The paper also unpacks the significant data requirements that will underscore these risk management practices and provides guidelines for how firms should begin to prepare.

CLIMATE-RELATED FINANCIAL RISK 101

Climate change risk management is centred on two primary risk drivers – **physical and transitional risk** – and will have an idiosyncratic and systemic impact on financial services. The latter impact is of particular concern to regulators who believe extreme climate events and disorderly transitional events could produce significant systemic stress.

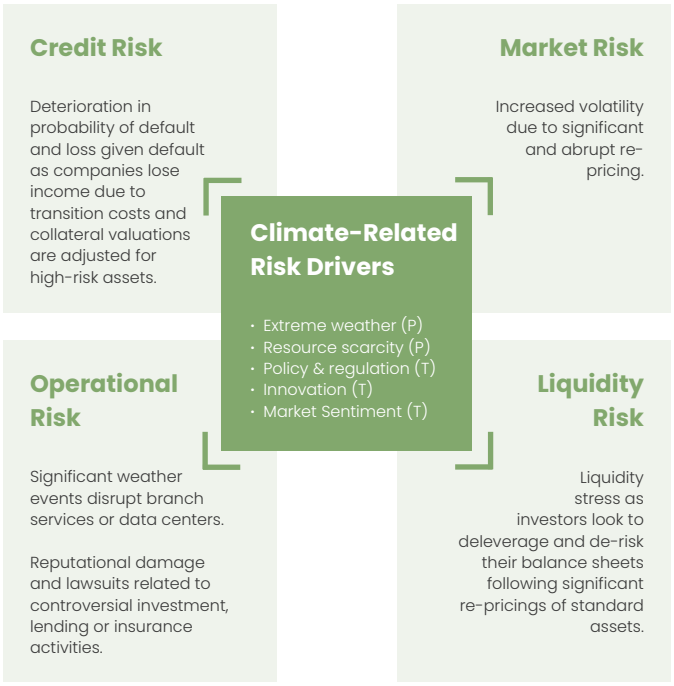
Physical risk: The risk directly attributed to changing weather/climate patterns that impact economies. Physical risk can be categorised as either "acute" or "chronic". An example of acute physical risk is extreme weather conditions, such as a drought or flood, while a chronic physical risk is one that persists over time, such as rising ocean levels or increasing land temperatures over several years, leading to resource shortages.

Transitional risk: The risk arising from the shift towards an environmentally sustainable and net-zero carbon emissions economy through, for example, the replacement of coal powered energy with renewables. This will impact the fossil fuel industry's income and sources of funding. As physical risk becomes increasingly prevalent, transitional risk is expected to increase, with technological improvements, regulatory, stakeholder and consumer pressure, and climate policy further necessitating transition and elevating the associated risks.

These risks are inherently linked to and observable through traditional risk types including credit, market, liquidity, and operational risk, as well as through reputational damage, as investors become increasingly sensitive to environmental, social and corporate governance issues.

1. World Economic Forum, 'The Global Risks Report 2021' (2021), http://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf

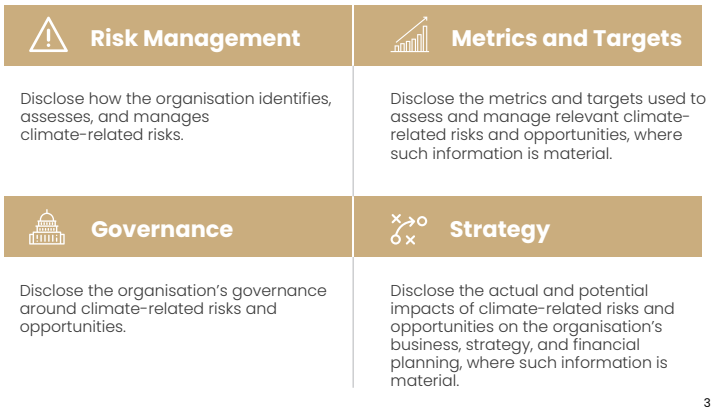
Examples of Climate-Related Financial Risk Drivers



The challenge for financial services institutions is two-fold: firstly, to ensure their balance sheets are protected from climate-related disruptions with estimates of $4.2 trillion worth of manageable assets at risk and secondly, to enhance the degree to which the services and products they are providing are funding, insuring and investing in the green economy. [2]

THE REGULATORY HORIZON – WHAT ARE THE FUTURE EXPECTATIONS?

There has been significant momentum gathering around regulatory-enforced climate-related risk management over the past decade, with the publication of the **Financial Stability Board's Task Force on Climate-related Financial Disclosure (TCFD)** report in 2017 establishing disclosure recommendations and principles for **governance, strategy**, and **risk management**, as well as **metrics and targets**.



[3]

While not compulsory, the TCFD recommendations have become the authoritative foundation for various regulatory developments in the United Kingdom and the European Union and have been supported in South Africa. **The TCFD recommendations, along with the Network for Greening the Financial System (NGFS) workstream and the EU's Action Plan for Financing Sustainable Growth, are generally regarded as the primary sources shaping global climate risk management trends**.

Financial services institutions should therefore be sensitive to publications issued by these organisations, as well as their respective regulators and supervisors, to gain insight into what will likely be expected over the coming years.

Significantly, the Basel Committee on Banking Supervision (BCBS) has also released two papers on climate-related financial risk measurement methodologies and risk drivers.

2. The Economist Intelligence Unit, 'The cost of inaction: recognising the value at risk from climate change (2015), https://eiuperspectives.economist.com/sites/default/files/The%20cost%20of%20 inaction_0.pdf

3. TCFD, 'Recommendations of the Task Force on Climate-related Financial Disclosure' (2017), https://assets.bbhub.io/company/sites/60/2020/10/FINAL-2017-TCFD-Report-11052018.pdf

While the UK and EU are beginning to establish regulatory policy (detailed below), South Africa has yet to develop any explicit policy around climate-related risk management, although voluntary international policies such as the TCFD are available for market participants. South African banks must, however, comply with the ESG requirements of the Companies Act and King IV if listed on the JSE.

METRICS AND TARGETS

Reporting is expected to be a multi-year endeavour with the ultimate goal of achieving high-quality and reliable quantitative metrics and reporting, supplemented by qualitative insights. Shareholders, analysts and supervisors will require decision-useful, comparable insights into financial services companies and their "financed emissions".

The Task Force on Climate-related Financial Disclosure (TCFD) is the current benchmark with around 60% of banks, insurers and asset managers in developed economies aiming to comply with the TCFD.[4]

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The TCFD provides specific guidance on implementing metric disclosures for banks at industry, geography, credit quality and average tenor levels. Additionally, banks should aim to report on their amount and percentage of carbon-related assets relative to total assets (the Green Asset Ratio – one of the better indicators of transitional risk), together with other metrics, including their exposures' Carbon Intensity, Carbon Footprint and Total Carbon Emissions, with thresholds defined by the GHG Protocol methodology.[5]

Upcoming Policy (UK): The Prudential Regulation Authority (PRA), as outlined in its Supervisory Standard 3/19, expects banks and insurers to be moving towards high-quality reporting within their Annual Reports with consideration of the TCFD report, as well as aiming to strengthen their disclosures on governance, strategy, risk management and other important metrics by 2022. The Financial Conduct Authority is also consulting on a comply-or-explain exercise linked to TCFD disclosure for premium listed firms.

Upcoming Policy (EU): The European Banking Authority (EBA), as part of the EU's Action Plan for Financing Sustainable Growth, is aiming to improve banks' disclosure information regarding climate risks within the banking, trading, and loan book, along with risk management and mitigation actions and the Green Asset Ratio, by 2022. The EBA's reporting requirements are aligned with and designed in accordance with the EU's Non-Financial Reporting Directive (NFRD), the EU's Taxonomy Regulation and the TCFD.

The NFRD requires large companies, banks and insurance companies with more than 500 employees to publish reports on their ESG policy implementations and relevant key performance data such as GHG emissions and total energy consumption, as well as CapEx and OpEx related to climate change mitigation. Ultimately the NFRD will produce datasets that will allow banks and other financial institutions to produce reliable data for GAR and other metric calculations by 2022.

4. IIF, 'Global climate finance survey: a look at how financial firms are approaching climate risk analysis, measurement and disclosure' (2020), https://www.iif.com/Publications/ID/3731/IIFEBF-Global-Climate-Finance-Survey-A-Look-At-How-Financial-Firms-Are-Approaching-Climate-Risk-Analysis-Measurement-And-Disclosure

5. **For additional insight see:** TCFD, 'Implementing the recommendations of the task force on climate-related financial disclosures' (2017), https://www.fsb-tcfd.org/publications/

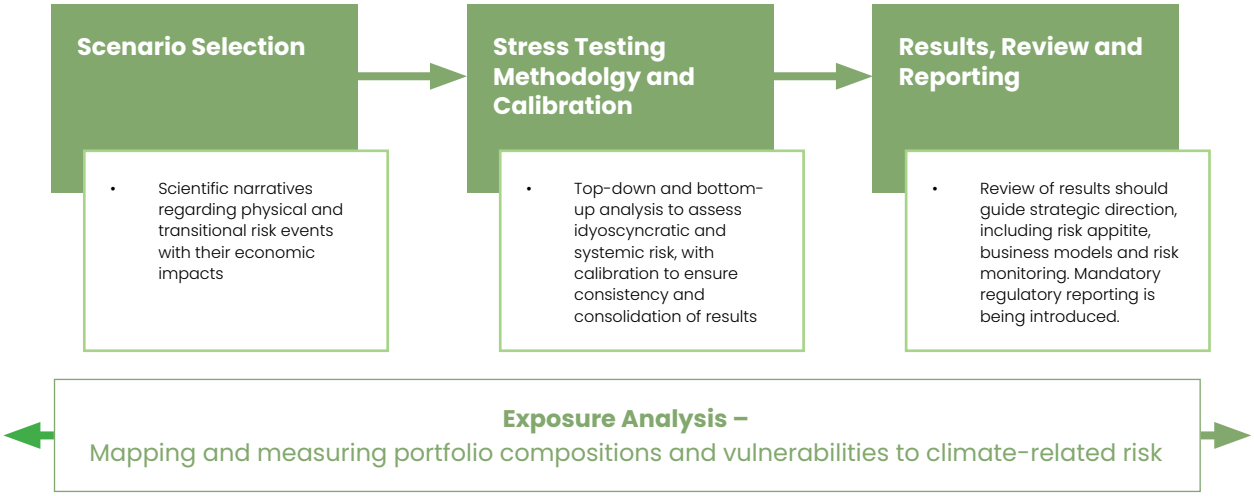
RISK MANAGEMENT

Although financial services activities do not directly contribute to global warming, they nonetheless play an important role in influencing the aggregate amount of emissions through GHG Protocol defined scope 3 emissions or "financed emissions" – carbon intensive activities of assets not owned or controlled by the reporting organisation.

Financial institutions will therefore need to identify, assess, monitor and report on climate-related risk as it relates to their exposures to underlying assets and securities that produce scope 1 and 2 emissions – direct and indirect emissions due to the generation or purchase of carbon-intensive energy, respectively.

- **Scenario Analysis and Stress Testing**

Qualitative and quantitative forecasting is a priority on the regulatory agenda to ensure financial services firms can quantify climate-related financial risks and opportunities, which will guide and mould strategic decisions through impact assessments. The following process provides a brief overview when planning such an exercise:



Significantly, physical risk and transitional risk are not considered additional risk categories by the BCBS but are rather regarded as risk drivers that impact existing risk categories, including credit, market and liquidity risk. These should be integrated into existing risk methodologies to produce climate-risk adjusted PDs, LGDs and risk-weighted assets. According to the Institute of International Finance, "As of 2021, only 15% of financial institutions have explicit climate related stress testing and scenario analysis practices as a formal part of their risk management frameworks".[6]

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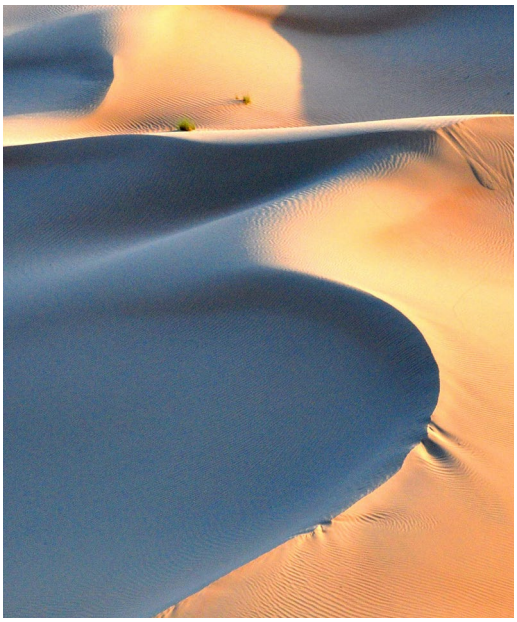
6. IIF, 'Global climate finance survey: a look at how financial firms are approaching climate risk analysis, measurement and disclosure' (2020), https://www.iif.com/Publications/ID/3731/IIFEBF-Global-Climate-Finance-Survey-A-Look-At-How-Financial-Firms-Are-Approaching-Climate-Risk-Analysis-Measurement-And-Disclosure

Upcoming Regulation (UK): The Bank of England will be launching its inaugural Biennial Exploratory Scenario (BES) in June 2021 to test UK banking and insurance resilience through three scenarios:

Early Policy Action	The transition to a carbon neutral policy starts early and, as per the Paris Agreement (2016), the global temperature increase stays below 2˚C. This results in significant transitional risk with mild physical risk.
No Additional Policy	No additional policies are adhered to (apart from the current policies already in place) and the Paris Agreement targets are not met, resulting in little transition risk but significant physical risk.
Late Policy Action	Action is delayed by 10 years; however, the global temperature increase is kept below 2˚C through global action in response to significant disruption to the global economy. This results in significant physical and transitional risk.

The exercise will use a 30-year modelling horizon due to the prolonged timeframes of climate change, while incorporating physical, transition and macro-financial risk drivers. The BES exercise will have an emphasis on qualitative questionnaire analysis due to the complexity and size of the exercise.

Upcoming Regulation (EU): Similarly, the European Banking Authority is in the process of developing an EU-wide methodology for stress testing, while the Network for Greening the Financial System (NGFS) – which consists of 83 prominent central bank and financial supervisor members – has developed its own guidelines and scenarios for climate scenario analysis.



- **Risk Management Practices**

Institutions must begin to incorporate **risk identification and monitoring practices** into their risk frameworks to support capital allocation, pricing and loan approval decision-making, as well as portfolio monitoring and client relationship management. Firms should identify all material exposures and provide an assessment of how material exposures are determined.

Examples of risk management practices include climate-change compliance score cards for loan origination approval and pricing, exposure heatmaps to highlight concentration risk in portfolios, and internal and supervisory-enforced stress testing and scenario analysis, such as **banks' Internal Capital Adequacy Assessment Process (ICAAP) practices and insurers' Own Risk and Solvency Assessments (ORSA)**.

Upcoming Policy (UK): In its Dear CEO letter regarding Supervisory Standard 3/19, the PRA highlighted that firms should be able to demonstrate how they have embedded climate risk management into their framework by the end of 2021. This should include consideration of risk identification, measurement, monitoring, mitigation, and reporting, as well as setting risk appetites and moving towards a strategic approach that separates climate-related financial risk from corporate social responsibility.

Upcoming Policy (EU): The European Central Bank (ECB) released its "Guide on Climate-Related and Environmental Risks", which sets out its expectations for risk management and disclosure. The ECB is currently in the process of reviewing existing divergences to its expectations for significant institutions. The paper sets out the ECB's expectations for strategy, governance, risk management and disclosure.

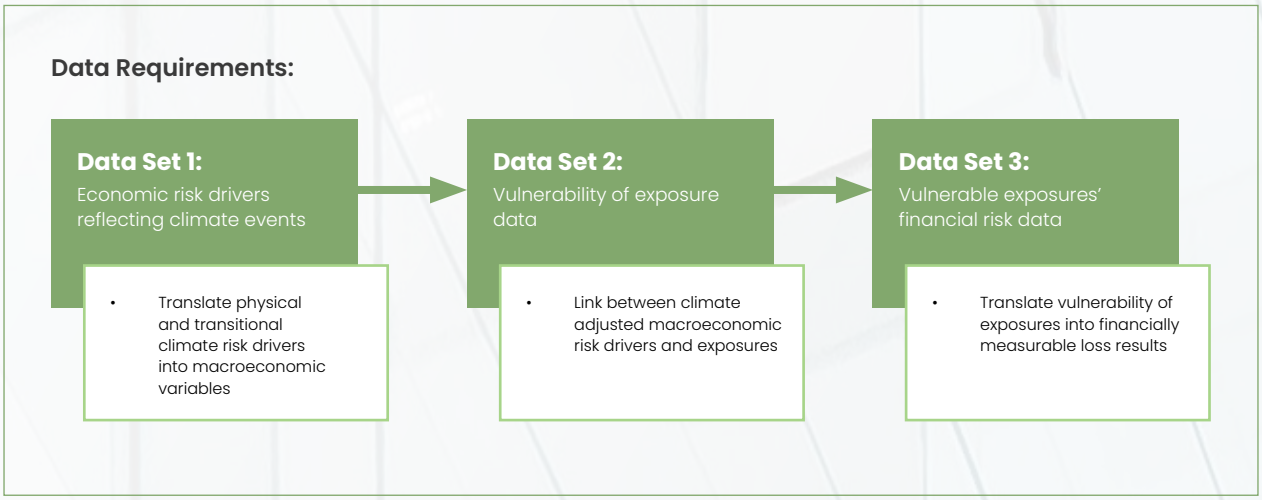
- **Governance and Strategy**

To drive the climate risk agenda across the organisation, financial services institutions should assign and define the roles and responsibilities of the board and management to assess and manage risks and opportunities. Additionally, business models, risk appetites, strategy and financial planning should be evaluated and disclosed across the short, medium, and long term through the lens of climate-related risk and opportunity. These actions are required of financial services institutions in most countries that have already committed to carbon neutral and carbon reduction targets.

THE DATA ISSUE – HOW TO APPROACH CLIMATE-RELATED RISK DATA

Climate-related risk management comes with substantial uncertainty and novel practices, which will introduce two significant challenges for financial services institutions: firstly, the management of extensive data requirements and secondly, the integration of climate-related risk into existing scenario analyses and stress testing frameworks.

Financial services institutions must understand the data requirements that will enable the identification and mapping of exposures with vulnerabilities to climate change and then quantify and measure the impact of climate events to these vulnerable exposures.



Economic risk drivers reflecting climate events: Data, often derived from scientific modelling, translates current and expected climate change risks into economic risk drivers such as GDP, unemployment rates, indices and prices, as a way of assessing the impact on banks' exposures. This will include the physical and transitional events that may impact the assets and liabilities of the firm, such as geospatial data regarding high-risk areas. Transitional risks, including exposures in industries becoming obsolete, would require data regarding performance and cost of energy substitutes relative to carbon-intense assets to model its impact on price elasticity.

While firms have looked to produce this inhouse, a lack of skills and experience has often resulted in third party datasets being constructed and published as usable data formats for financial modelling by government agencies, academic organisations and other third parties.

Vulnerability of exposure data: Firms will also be required to collect substantial and detailed data related to their exposures, such as geospatial locations, counterparty economic activity and GHG emission data, to effectively match an exposure with climate risk adjusted economic drivers and climate change events. Many firms will find their current data insufficient with further data required from their clients and third-party sources.

Exposure-financial data: Financial variables for counterparties, ordinarily required in conventional risk management, will also be required for modelling financial impacts on exposures and impacts on variables, such as probability of default and loss given default for credit risk.

WHERE TO START

Managing Data: Firms will need to identify the gaps within their current data landscape, based on the datasets described above, to map and measure their exposures to climate-related risks. This will also enable them to aggregate and dissect credit exposures, equity and debt holdings, and trading positions by industry, geography, credit quality and average tenor. Rectifying exposure-level data gaps may become operationally intensive with organisations required to obtain granular counterparty data from various sources, such as third parties including credit and ESG rating agencies and the clients themselves.

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Firms will need to consider how to model this data to be used across the organisation with consideration of sourcing, integration, and processing, as well as data quality and formats across the various datasets. The two most significant factors impacting the efficiency of data models and downstream risk modelling and management processes will be the standardisation and availability of data.

Understanding Standards: It will be important for financial services institutions to remain up to date with the latest standards that define the principles of climate-related risk, such as the EU's taxonomy and Global Industry Classification Standard, which determines whether an economic activity qualifies as environmentally sustainable. It is important to note that international standard-setting bodies – including the BCBS, IFRS foundation and IAIS – have already launched initiatives around climate-related risk

Integrating Modelling: Firms should begin to identify, map and prioritise their various exposures (portfolio analysis) to their primary risk drivers and climate hazards, while also investigating how climate-related financial risk scenario analysis and stress testing can be integrated into the existing risk frameworks from data sourcing, modelling, reporting and mitigation outcomes. It will be important to develop and understand the assumptions needed for forward-looking exercises and to begin to understand the transmission pathways for climate change. This will be an iterative process with many firms beginning with simplistic qualitative exercises focused on priority sectors or asset classes.

From a quantitative modelling perspective, climate risk events rely on various assumptions with significantly extended timeframes of 30 years and various interdependencies, including governmental and client-specific climate change intervention. Scientists also warn that climate change may exhibit a non-linear

progression with many significant uncertainties remaining around physical and transitional risk estimates and assumptions. Firms should therefore perform stress testing with a variety of scenarios and modelling approaches to produce more reliable results while data standardisation and availability, as well as assumption certainty, mature.

Firms will need to make a trade-off between the granular data requirements of a bottom-up exposure-by-exposure approach to risk assessment or a more general top-down approach in which risk is apportioned across exposures, based on high-level sector or subsector aggregations.

Key Dates and Deliverables

2017 — TCFD (Task Force on Climate-Related Financial Disclosures)

Voluntary CRFR disclosure recommendations report released by the TCFD. Most regulatory policy is drafted to align with the report.

2020

European Commission releases the EU Taxonomy, enforcing standardised climate terminology while using the data reporting requirements of the Non-Financial Reporting Directive (NFRD).

European Central Bank releases "Guide on Climate-related and Environmental Risks", detailing expectation on banks' CRFR management and disclosure.

2021

Bank of England's Supervisory Statement 3/19 requiring full CRFR embedment in governance, strategy, risk management, scenario analysis and disclosure.

Bank of England's Biennial Exploratory Scenario exercise begins to stress test the resilience of the UK financial system across large banks and insurers.

Upcoming

European Banking Authority consults on EU Pillar 3 reporting, stress testing and scenario analysis.

N/A

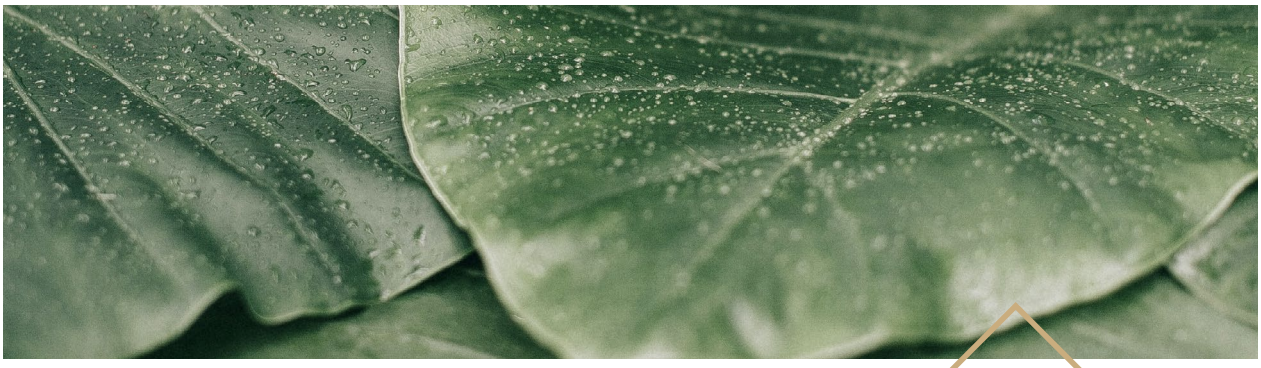
South Africa has yet to develop any explicit policy around CRFR management. South African banks must, however, comply with the ESG requirements of the Companies Act and King IV, if listed on the JSE.

HOW MONOCLE CAN ASSIST

The practice of climate-related risk management is relatively new and challenging however Monocle understands the core data and process principle components. As our clients begin to embed climate-related financial risk management within their operations we are well-equipped to analyse firms' data landscapes to identify data gaps and furthermore remedy these gaps. Our deep understanding of and extensive experience with data management - garnered through our work on multiple projects related to BCBS 239 and the principles of effective data aggregation and reporting - ensures that we can design and build robust regulatory reporting solutions to meet all disclosure requirements.

We provide support for the embedment of processes such as scenario planning, stress testing and reporting, as well as the array of risk management practices employed by financial services institutions, from climate-adjusted credit score cards, to heat map risk and threshold monitoring.

Our experience in risk modelling and integrated stress testing across all the major risk types ensures that we are well positioned to assist our clients in iteratively developing their modelling capabilities while overcoming the challenges of uncertain assumptions, limited data and integration with the wider risk framework.



ABOUT MONOCLE

Monocle is an independent management consulting firm specialising in banking and insurance. Since our establishment in 2002, we have worked with industry-leading banks and insurance companies around the world, including institutions in the United Kingdom, Europe, Scandinavia, Asia, South Africa and throughout sub-Saharan Africa.

We design and execute bespoke change projects from start to finish, bridging the divide between business stakeholders' needs and the complex systems, processes and data that sit under the hood. We offer several unique capabilities to our clients, which have been forged over time through the combination of a highly specialised skillset and extensive experience working with the systems, processes and people that are at the heart of the financial services industry.

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