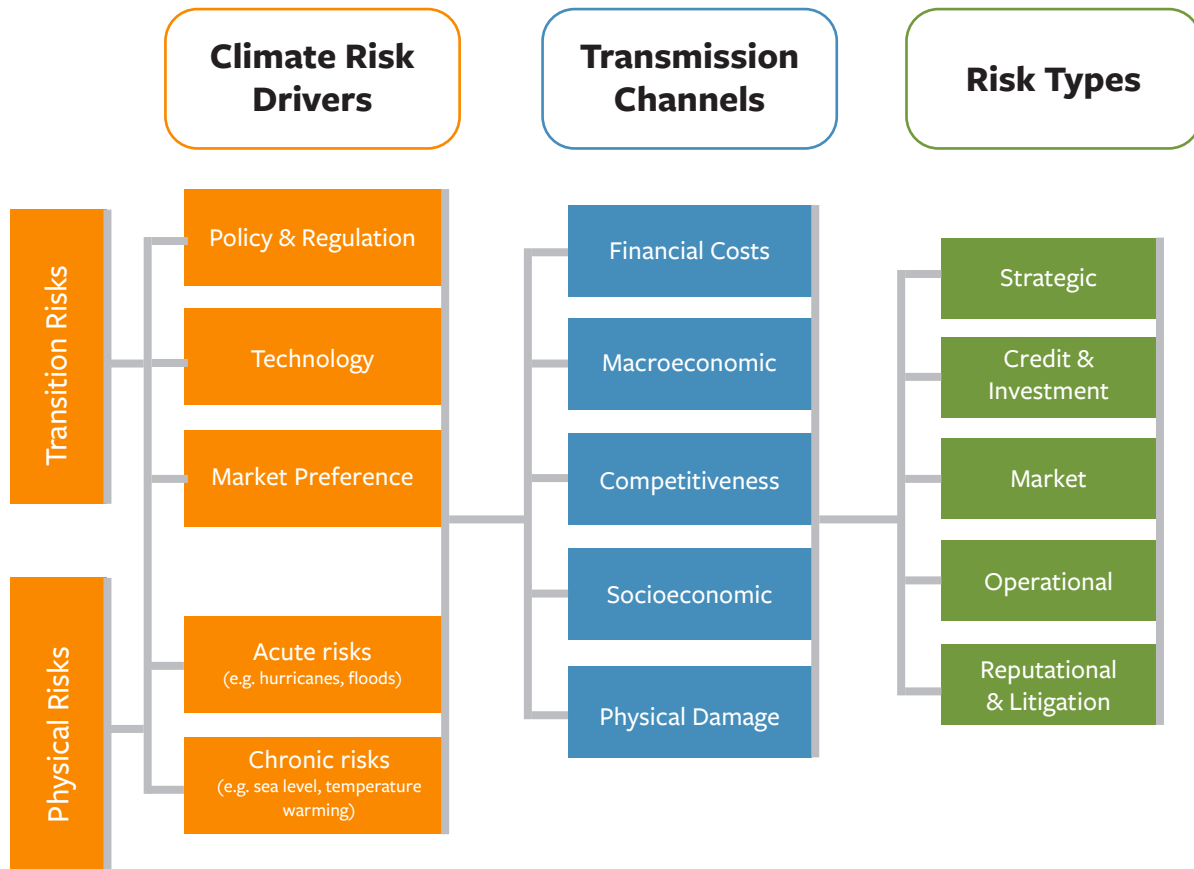


CLIMATE RISK AND CAMELS

Some financial institutions, financial regulators, the Network for Greening of the Financial System (NGFS), the Bank for International Settlements (BIS), and the Financial Stability Board (FSB) have begun identifying climate risks and their transmission channels. Many of these institutions have published information similar to the chart below.

Climate Risk Drivers and Transmission Channels

Physical risk includes acute risks (e.g. fires, storms, floods) and chronic risks (e.g. temperature warming, sea level rise). Transition risk refers to financial loss as a result of the transition away from high-emitting activities towards a low-carbon economy due to changes in government policy, technological innovation, market shifts, and reputational risk. Both physical and transition risks are transmitted through a range of financial and economic channels, including financial costs, macroeconomic, competitiveness, socioeconomic, and physical damage, which can impact strategic, credit, market, operational, and reputational and litigation risks.



Source: The Federal Reserve Board’s “[What are Large Global Banks Doing About Climate Change?](#)”



Integrating Climate Risk into CAMELS

Climate-related financial risk is a cross-cutting risk that manifests through well-recognized and established types of risk that can be captured in the CAMELS rating system. Ceres recommends regulators begin with assessing **asset quality** and **management capability** components, and initially focus on **credit** and **operational** risks.

Capital adequacy could be significantly affected by both transition and physical risks. The European Central Bank (ECB) raised capital requirements for some banks **based** on the outcomes of their 2022 climate scenario analysis.

- **Ability of management to address emerging risks** – Does the institution have a process to evaluate the solvency impact of climate-related financial risks that may materialize within their capital planning horizons? This includes incorporation of physical and transition risks that are relevant to the institution’s business strategy and exposure profile, and whether the institution has begun identifying relevant climate-related risk drivers and developing risk indicators and metrics to quantify exposure.
- **Quality, type, liquidity, and diversification of assets** – Is the institution assessing how climate-related financial risks could impact the quality of its assets? Is the institution evaluating if climate risks change the concentration of risks across its portfolio? Is the institution assessing how climate-related risks feed into and increase its liquidity risk?
- **Loan and investment concentration** – Does the institution have geographical, sectoral, or institutional concentrations vulnerable to physical or transition risks?
- **Ability to address emerging needs for capital** – Has the institution evaluated its ability to address climate-related shocks that could lead to the need for more capital? Is the institution conducting climate scenario analysis of extreme but plausible climate scenarios across both physical and transition risks that could impact its capital adequacy?
- **Balance sheet composition** – Has the institution identified how climate-related risk drivers could impact the value of financial instruments in their portfolios, evaluated the potential risk of losses on and increased volatility of their portfolio, and established processes to control or mitigate the associated impacts? Has the institution identified and assessed geographical or sectoral concentrations vulnerable to physical or transition risks? Has the institution assessed the impact of climate risks on its nontraditional activities including investments, venture capital, security brokerage, **insurance underwriting**, and asset securitization?
- **Field of membership** – Does the institution assess and monitor climate-related risks of new and existing clients, including during the onboarding, credit, and transaction review processes? Does the institution actively engage and collect data from clients to better understand transition strategies and risk profiles?
- **Economic environment** – Does the institution consider in their forward-looking assessment any risks, and any concentration within and between those risks, that may arise from relevant changes in its operating environment (including the energy transition)? Does the institution impose loan or credit limitations or restrictions, or deploy other risk mitigation strategies, for identified material climate-related risks?

Asset quality could be significantly affected by both transition and physical risks.

- **Quality of loan underwriting, policies, procedures, and practices** – Are there internal controls and due diligence procedures to review new loans in high transition risk sectors, particularly where those assets are geographically concentrated?

- **Quality, type, liquidity, and diversification of assets** – Are there policies in place to determine which assets may be at risk of losing value as markets transition away from high greenhouse gas emitting industries and companies? Assets may lose value due to physical climate risk disasters, including acute disasters such as fires, floods, and ice storms, and chronic risks such as increasing temperatures and sea level rise.
- **Loan and investment concentration** – Does the institution have geographical or sectoral concentrations vulnerable to physical or transition risks? This is of particular importance for small and regional institutions.
- **Appropriateness of investment policies and practices** – Does the institution review its investment portfolios for climate-related risks (to assess, e.g., asset exposure, stranded assets, asset depreciation, corporate defaults, and sovereign bond revaluation) and implement appropriate policies to mitigate those risks?
- **Erosion of asset quality** – Does the institution assess the impacts of climate risks on its tangible, intangible, and financial assets? Tangible asset deterioration includes land loss; lost or damaged real estate and equipment; disruptions to shipping, trade, and supply chains; revenue impacts from related industries such as fishing, agriculture, tourism, mortgages; and reduced productivity from physical (e.g. wildfires, acute and chronic temperature changes, droughts/water stress, storms, floods, coastal flooding, high winds, and hurricanes), socioeconomic (e.g. impacts to livability and workability, adverse impacts to infrastructure services (such as healthcare), social and political unrest, adverse impacts to credit scores, lower or changing employment, and decreased wealth), and transition (e.g. policy shifts, new technologies, and higher costs of doing business) risks. Intangible asset deterioration includes reputational damage, decline in demand for GHG-emitting products, and regulatory shifts. Financial asset deterioration includes improperly pricing risks to financial instruments (e.g. [derivatives](#)), rapid revaluation of assets (e.g. exposure to agricultural commodity price increases due to crop damage), losses from various asset classes, and higher default rates (e.g. from borrowers in or dependent on the fossil fuel industry).
- **Fair market value of investments compared to book value** – Does the institution identify and understand how climate-related risks will impact the value of its assets in the future, including the value of assets comprising its liquidity buffers? Institutions should use climate scenario [analysis](#) to assess impacts to assets.
- **Risk ratings** – Is the institution including climate-related risks in its risk ratings?

Management capability could impact the institution’s ability to adequately assess, plan for, and mitigate climate risks.

- **Strategic planning** – Are climate-related financial risks part of the institution’s strategic and business plans? Are these plans integrated with decision-making and risk appetite?
- **Internal controls** – Do audit functions and processes account for the climate risks that the institution is most vulnerable to?
- **Three lines of defense** – Has the institution incorporated climate risks into their corporate governance and internal controls, including through policies across all three lines of defense and providing adequate resources and expertise for implementation and review?
- **Risk data aggregation and internal reporting** – Does the institution regularly assess the materiality of climate-related financial risks? Does the institution have systems in place to collect and aggregate climate risk data as part of its overall data governance and IT infrastructure? Is climate-related financial risk data included in the institution’s internal reporting, monitoring, and escalation processes to facilitate timely and sound decision-making across the institution?



- **Adequacy of policies and procedures** – Do the institution’s policies and procedures effectively measure and monitor climate risks, including access to appropriate and timely data to measure exposure?
- **Education of staff** – Are institution staff trained to recognize climate-related risks in particular loans and sectors? Are staff across the organization trained, including business units, independent risk management, legal, and internal audit?
- **Risk resources** – Has the institution allocated appropriate resources to measure and manage climate-related financial risks? Has accountability for managing these risks been established within existing or new organizational structures?
- **Risk measurement tools** – Does the institution employ tools to measure and monitor exposure to climate-related financial risks including, among others, exposure analysis, heat maps, climate risk dashboards, and scenario analysis?
- **Education and oversight by board members** – Are board members familiar with climate-related financial risks? Does management regularly report to the board on the level and nature of climate-related financial risks posed to the financial institution? Are climate-related scenario analysis results regularly and clearly communicated to the board?
- **Operational risk** – Has the institution incorporated physical risk disasters from climate change into its business continuity plans to ensure its ability to continue operations and serve customers? These risks could include, among others, utility outages, increases in customer demand, and physical damage to buildings.

Earnings sufficiency may be implicated where an institution’s portfolios are particularly vulnerable to physical and transition risks, and the institution has failed to adequately implement mitigation processes.

- **Quality and sources of earnings** – Is the institution heavily reliant on fossil fuel loans or investments (or other high GHG-emitting sectors such as steel and cement production, transportation, or utilities), has it failed to adequately plan for transition, or are its loans supported by collateral increasingly at risk from extreme weather events or rising sea levels? Are the institution’s earnings sources concentrated in sectors or geographies that are particularly vulnerable to climate risk (such as agricultural loans or coastal real estate)?
- **Adequacy of future earnings and forecasting processes** – Does the institution include climate risk drivers (including profitability of borrowers and their assets) in its scenario analysis exercises?
- **Earnings exposure to credit risk** – Does the institution adequately account for exposure to credit losses from physical and transition risks? Wildfire, floods, or policy changes that could impact a borrower’s ability to meet its debt obligations to the lender, and assets could become inaccessible or uninsurable, impacting the value of collateral for lenders.
- **Integration of climate-related risk into compensation** – Has the institution considered changing its compensation policies after incorporating climate-related financial risks into its business strategy and risk management framework?
- **Probability of default and loss given default** – Is the institution assessing how climate-related financial risks could impact internal credit ratings, probability of default (PD), and/or loss given default (LGD)? Is it adjusting earnings sufficiency based on changes in internal credit ratings, PD, and/or LGD?

Liquidity adequacy may be implicated where an institution's portfolios are particularly vulnerable to physical and transition risks, and the institution has failed to adequately implement mitigation processes.

- **Mechanisms to monitor and control risk** – Has the institution assessed the impacts of climate risks on net cash outflows or the value of assets comprising their liquidity buffers? This includes developing key risk indicators and metrics to quantify risk exposure, and assessing links between these risks and traditional risk categories. Has the institution integrated risks identified in this assessment in its liquidity adequacy assessment processes and scenario analysis exercises?
- **Management response to risk approaching/exceeding risk limits** – If climate risks are found to be material and approach/exceed the institution's risk limits, is there a climate risk-specific response plan in place to reduce, remove, or transfer those risks? This could include increasing available capital for resiliency activities, investments in green energy projects, and winding down investments in high-emitting sectors.
- **Assessment of liquidity impacts** – Has management assessed whether climate-related financial risks could affect its liquidity position, including the liquidity of its assets? Some assets may become illiquid and stranded due to climate-related risks.
- **Adequacy of liquidity sources to meet future needs** – Has management incorporated climate-related risks into its liquidity buffers and liquidity risk management practices?
- **Diversification of funding sources** – With climate risk, there is potential for contagion across sectors, industries, and institutions. Has the institution assessed climate-related contagion channels and risks and sufficiently diversified its funding sources?
- **Degree of reliance on volatile funding sources** – Has the institution evaluated the potential risk of losses on and increased volatility of their portfolio, and established effective processes to control or mitigate the associated impacts? This could include loans or investments in the fossil fuel industry (or fossil fuel-dependent sectors) and assets located in climate-vulnerable areas (such as real estate exposed to sea level rise or energy markets during a heatwave or natural disaster).
- **Interest rate impacts** – Has the institution considered liquidity impacts stemming from changes in interest rates that might arise from climate change, including government policies (inflation reduction act, carbon pricing, etc.) and macroeconomic effects from the transition to a net zero economy and damages from physical impacts?

Sensitivity to market risk may be impacted by changes to commodity prices (particularly fossil fuels), exchange rates (such as from large climate disasters), or interest rates (including carbon pricing).

- **Sensitivity to current and future earnings and capital value** – Has the institution assessed its earnings sensitivity to climate-related financial risks, including its current sensitivity and its future sensitivity over a longer time horizon? Many financial institutions globally are assessing climate-related financial risk over a 30-year time horizon as these risks are expected to increase over time as physical risks continue to escalate and government policies, societal preferences, and technological advancements expedite transition risk.
- **Exposure to market risk** – Does the institution adequately account for exposure to asset losses and increased cost of capital from physical and transition risks? Policy changes, new technologies, investor-driven reallocations of capital, and tangible asset deterioration or loss could impact both the institution's returns and the borrower's ability to meet its debt obligations.

- **Nature and complexity of interest rate exposure** – Has the institution considered changes in interest rates that might arise from climate change, including government policies (e.g. the Inflation Reduction Act or carbon pricing) and macroeconomic effects from the transition to a net zero economy and damages from physical impacts?
- **Clearly defined risk mitigation strategies** – Has the institution addressed its climate-related financial risk by adopting tangible risk mitigation strategies, such as engaging with its borrowers on their transition plans, reducing exposure to companies without credible transition plans, changing compensation policies to account for climate-related financial risks, and providing financial incentives to borrowers to adopt risk mitigation strategies?
- **Changes to the value of commodities** – Has the institution considered climate-related impacts to commodity prices and its sensitivity to those impacts? Has it considered commodities exposed to transition and physical risk, including energy commodities, agricultural commodities, metals and mining-related commodities, and other commodities that are energy-intensive?
- **Foreign exchange risk** – Has the institution considered risks related to foreign exchange rates related to climate change? This could include shocks from physical climate disasters. For example, Japan’s 2011 earthquake and tsunami caused significant volatility in the foreign exchange market, leading the G7 countries to intervene in the FX market (one of the only three times the Federal Reserve has intervened). It could also include impacts to the relative value of currencies from the transition to a net zero world.

About Ceres and the Ceres Accelerator for Sustainable Capital Markets

Ceres is a nonprofit organization working with the most influential capital market leaders to solve the world’s greatest sustainability challenges. The Ceres Accelerator for Sustainable Capital Markets aims to transform the practices and policies that govern capital markets to reduce the worst financial impacts of the climate crisis. It spurs action on climate change as a systemic financial risk, driving the large-scale behavior and systems change needed to achieve a net zero emissions economy through key financial actors including investors, banks, insurers, and regulators. The Ceres Accelerator also works with corporate boards of directors on improving governance of climate change and other sustainability issues. For more information, visit ceres.org and ceres.org/accelerator and follow [@CeresNews](https://twitter.com/CeresNews).

This document was prepared by the Ceres Accelerator as a resource for financial regulators to use in their efforts to ensure safe and sound financial systems and institutions, with information on how climate risk manifests and how it could be incorporated into the CAMELS rating system. Please contact Kelsey Condon at kcondon@ceres.org and Amy Kvien at akvien@ceres.org for more information.