

# Climate RiskGauge — Real Estate

**A global capability for evaluating the credit risk and valuation impact of climate-related transition and physical risk scenarios using a market-valuation approach for commercial and residential mortgages.**

## Overview

Following the 2015 Paris Agreement, over 185 countries are committed to reducing greenhouse gas (GHG) emissions through a range of policies, including carbon taxes that penalize company-specific GHG emissions. For commercial and residential real estate mortgages, it is critical to estimate the changes to the value of a property considering the property's idiosyncratic climate risk profile. Physical risks can deteriorate property value, while transition risks, such as carbon taxes, can increase borrower liabilities.

**Climate RiskGauge — Real Estate (CRG RE)** covers both commercial and residential mortgages globally, capturing physical risk at a property level through climate risk information and transition risk at a property and loan level by calculating emission projections based on energy ratings of each property and their corresponding tax rates. This leverages S&P Global Sustainable1's datasets on physical risks that provide projections of acute and chronic climate hazards per property based on distinct impact functions. It also considers Network for Greening the Financial System (NGFS) scenarios for macroeconomic variables and carbon tax projections for the next 50 years.

## Property-Level Data

**Physical risks** encompass diverse hazards, both chronic and acute, such as droughts, tornadoes, wildfires, and floods that affect each property to a different extent. Property-specific information regarding the propensity to experience a climate hazard helps quantify the financial implications for each property. S&P Global Sustainable1's datasets on physical risks cover nine physical risk hazards for 14 property types under four risk scenarios linked to slow, medium, medium-high, and high risk.

**Transition risks** capture details on risks arising from emissions on each individual mortgage by incorporating data on the emission factors per region through NGFS and S&P Global Sustainable1 and impact on the mortgage loan market based on NGFS variables.

## Tailored Approach

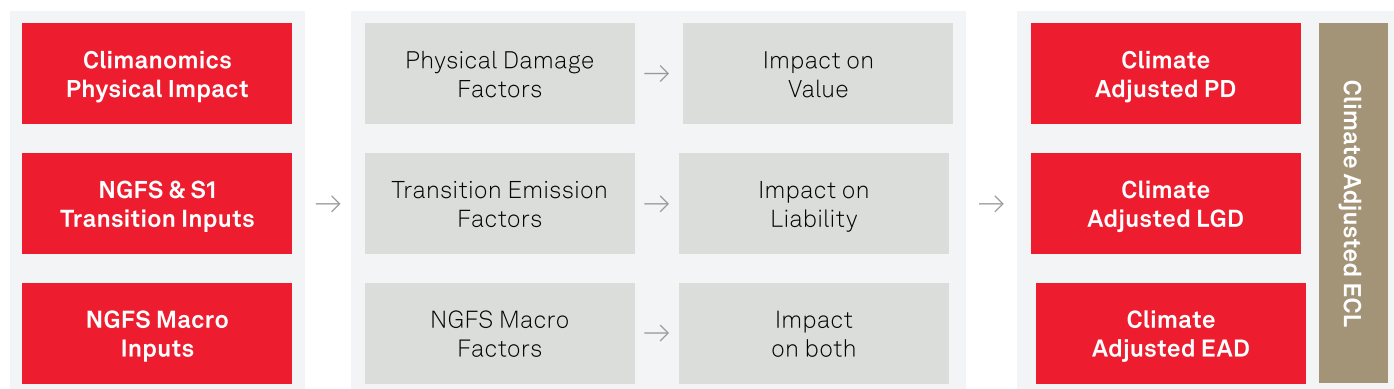
**Primary inputs** capture a mortgage's characteristics with fields such as property type, property value, loan value, maturity date, interest rate, etc.

The model provides climate-adjusted property values and loan amounts across a timeframe of the user's choosing along with PDs, LGD, Exposure at Default (EAD), Expected Credit Losses (ECLs), and credit scores mapped to S&P Global Ratings rating scale across the selected years. Additionally, the solution offers insights into the Climate Valuation Impact on real estate assets.

## Comprehensive Assessment

A Merton model approach is used that assumes default occurs when an asset value falls below the debt value. For a mortgage, the assets represent the property value. The debt corresponds to the mortgage payments made by the borrower to the lender.

**Figure 1: Analytical Dimensions and Steps Integrated in CRG RE**



Climanomics, part of S&P Global Sustainable1, is a risk analytics platform that calculates the financial impact of climate risk on physical assets and aggregates up to the portfolio level.

S1=S&P Global Sustainable1.

Source: S&P Global Energy Horizon. For illustrative purposes only.

## Multiple Scenarios

CRG RE enables users to select from a substantial library of Network for Greening the Financial System (NGFS) scenarios — including Phase III, Phase IV, and Phase V — or define a custom scenario by adjusting an NGFS pathway. The solution supports both stress testing and reporting requirements across multiple jurisdictions, globally, and has the flexibility to align with the scenario values from the International Energy Agency (IEA).

## Efficient Delivery

CRG RE is delivered via S&P Capital IQ/Market Intelligence Excel® templates, designed to automate financial spreading, simplify integration into existing workflows, and avoid dependency on additional software or technology.

Please contact your S&P Global sales representative or [support.energy@spglobal.com](mailto:support.energy@spglobal.com)

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