

# ECB report on good practices for climate and nature-related risk stress testing<sup>1</sup>

Risk Advisory - Quantitative Risk Services

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# Introduction

On 8 May 2026, the ECB published its “[Report on Good Practices for Climate and Nature-related Risk Stress Testing](#)”, providing banks with examples of observed good practices identified during the 2022 ECB Climate Risk Stress Test (CST) and the subsequent supervisory follow-up activities conducted between 2023 and 2025.

- The ECB’s 2022 Climate Risk Stress Test marked a key milestone in strengthening climate risk management practices across the banking sector.
- The CST acted as a catalyst for banks to enhance climate stress-testing capabilities and integrate climate risks into broader risk management frameworks.
- While significant progress has been made, the ECB notes that further enhancements to frameworks and modelling approaches remain necessary.

## What is the purpose and scope of the ECB's report on climate-related risk management practices?

The report shares good practices to help banks advance their climate-related risk management approaches, including in view of upcoming EBA Guidelines. The guidance is non-binding and illustrative, serving as a flexible reference tailored to each institution's circumstances rather than setting supervisory expectations.

## What challenges remain regarding climate and nature-related data?

The ECB identified ongoing challenges in collecting greenhouse gas emissions and Energy Performance Certificates (EPC) data. Institutions are also developing proprietary indicators and methodologies to improve data gaps and identify counterparties highly exposed to transition risks.

## How are banks advancing climate-related transition Risk modelling?

- ECB identified good practices for counterparty-level climate risk analysis.
- Advanced models aligned more closely with the 2022 ECB stress test scenarios.
- Banks are expanding variables beyond carbon prices and sectoral indicators.
- Sector-specific climate models increasingly integrated into PD models.
- Greater use of granular, counterparty-level credit risk assessment.
- Climate risk modelling expanding from PDs to LGD estimates.



## How does the updated ECB report differ from the 2022 report?

Compared with the [ECB report as of 2022](#), the updated report expands its focus on:

- on more sophisticated physical risk modelling methodologies;
- nature-related risk stress testing approaches

The 2026 report places greater emphasis on modelling approaches for integrating climate risk into stress-testing frameworks, particularly regarding physical and nature-related risks. Tables 1-3 of the ECB report provide further details on the observed good practices

### Scope and Purpose

This publication supports institutions in strengthening their stress-testing and scenario analysis capabilities ahead of the EBA Guidelines, applicable from 1 January 2027.

# Screening Approach for best-in-class Identification

The ECB's 2022 Climate Risk Stress Test (CST) was structured around three modules covering institutions' internal climate stress-testing frameworks, climate-related data capabilities and the integration of climate risks into credit risk models. Through quantitative and qualitative assessments, supported by supervisory judgement, the ECB identified institutions demonstrating more advanced practices, which informed the good practices presented in the report.

## Module 1

- For Module 1, the ECB focused its analysis on **three key questionnaire blocks relating to climate stress-testing capabilities**.
- The selection criteria were based on banks' scores achieved during the 2022 ECB Climate Risk Stress Test (CST), with the best-performing institutions selected for further assessment.
- The assessment covered the following blocks:
  - Block 1: General aspects of climate stress-testing frameworks, including governance and integration within risk management processes
  - Block 4: Climate stress-testing methodology, focusing on modelling approaches and methodological sophistication
  - Block 5: Climate risk scenarios, including the design and application of climate-related scenario analysis

## Module 2

- For Module 2, the ECB selected the good practices sample based on institutions' **ability to report fee and commission income without approximations, collect actual Scope 1, Scope 2 and Scope 3 GHG emissions data, and ensure the quality of estimated emissions data**.
- The assessment also considered the **robustness and reliability of methodologies** used where actual emissions data was unavailable.
- In addition, the ECB applied the proportionality principle to ensure a level playing field across institutions and considered differences in institutions' business models and data availability as part of the assessment process.

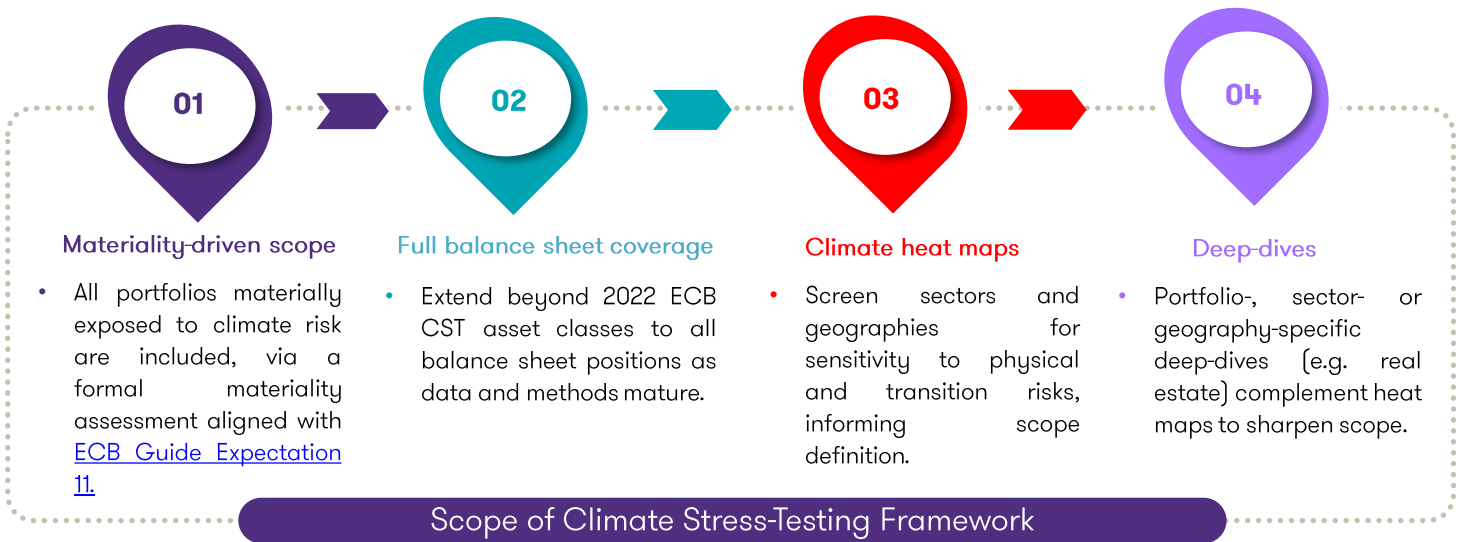
## Module 3

- Under Module 3, the ECB assessed whether institutions adequately **incorporated climate scenario shocks into probability of default (PD) and loss given default (LGD) estimates**. The assessment focused on the incorporation of carbon price shocks, GVA deterioration and flood risk impacts within stressed PD and LGD calculations.
- The ECB also reviewed institutions' modelling assumptions, calibration approaches and explanatory notes to assess how climate risk transmission channels were embedded within internal stress-testing frameworks

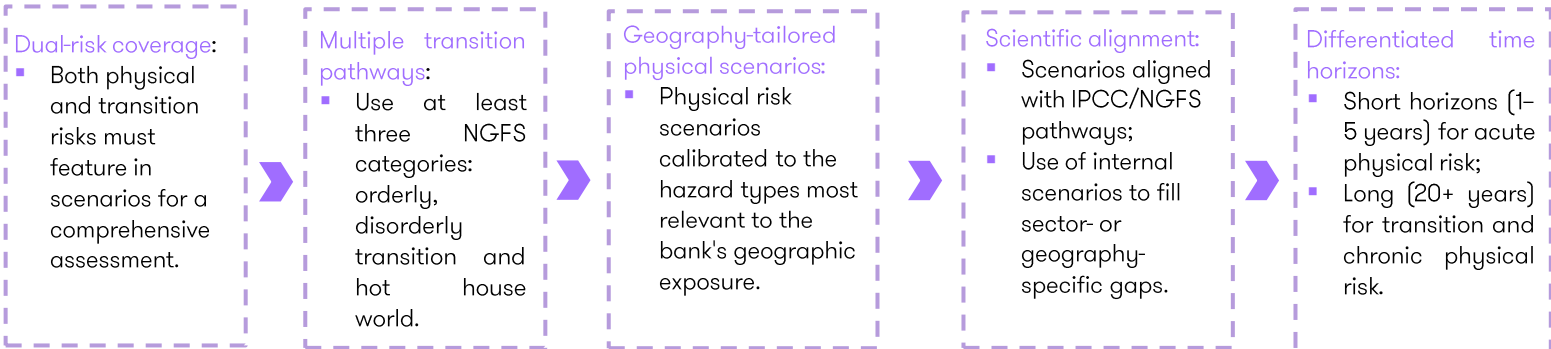
**Focus areas of the 2026 Update:** The 2026 update primarily focuses on integrating climate-related risks into stress-testing models, building on follow-up work from the 2022 ECB climate stress test and highlighting emerging industry practices beyond climate-related data capabilities.

# Climate Stress-testing Frameworks

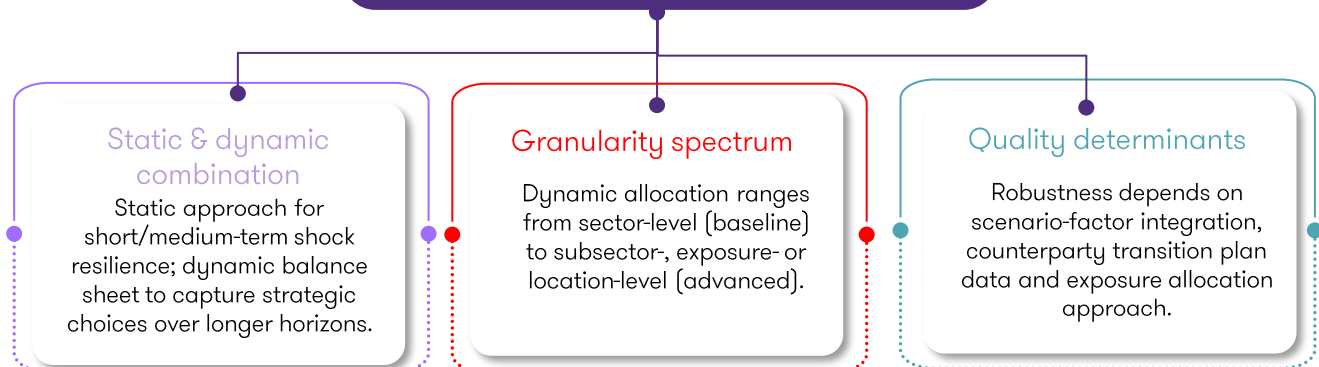
Drawing on supervisory observations across significant institutions, the ECB identifies three core methodological pillars that define robust internal climate stress-testing frameworks: scope, scenario selection and balance sheet approach. Good practices reflect a comprehensive, integrated approach, covering both physical and transition risks, using scientifically-grounded scenarios and combining static and dynamic methods.



## Climate Risk Scenarios

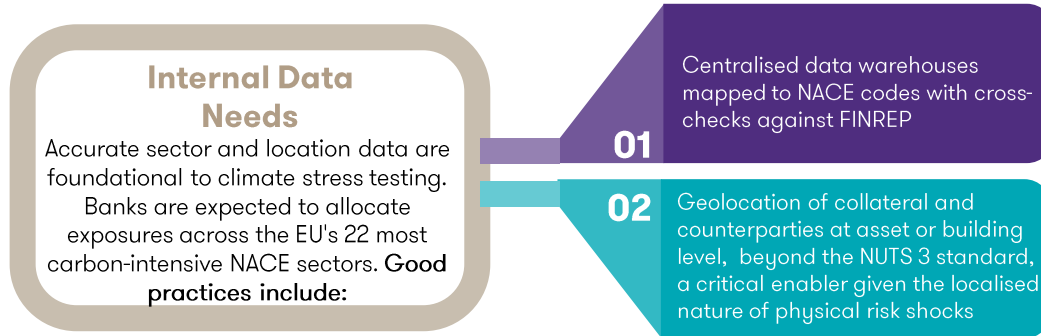


## Balance Sheet Approaches



# Data Requirements for Climate Stress Testing

The ECB observes that while institutions have made progress in addressing climate data gaps, significant challenges persist across three critical areas: internal sector and geolocation data, greenhouse gas emissions, and energy performance certificates, each requiring tailored collection strategies and rigorous validation.

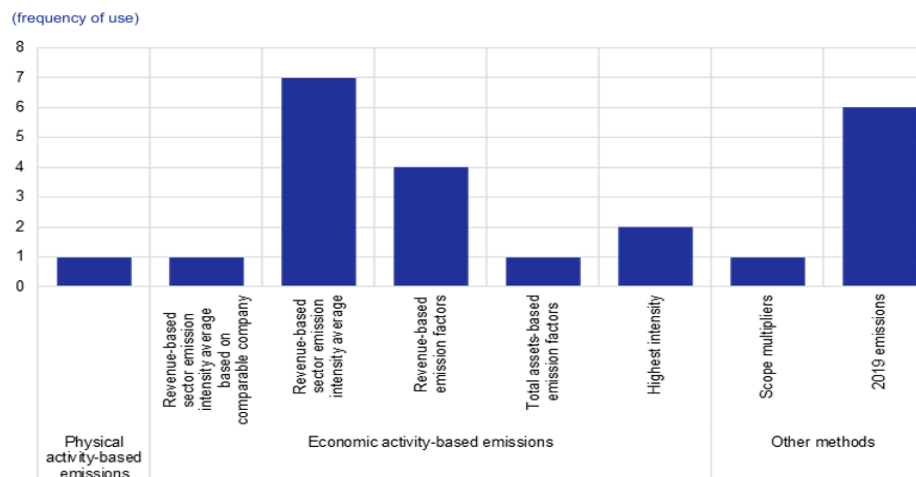


## Emissions Data

Collecting verified GHG emissions directly from counterparties remains the preferred approach, with best-in-class banks achieving above 70% actual data coverage for scopes 1 and 2. Where actual data are unavailable, good practices include:

- i. Ranked estimation methodology combining physical and economic activity-based proxies, applied in order of data availability and accuracy across sectors and subsectors.
- ii. Robust validation through cross-provider comparisons, outlier analysis and provider methodology scrutiny.

The chart on the right illustrates the main methodologies used by selected banks for developing in-house proxies, with institutions most frequently relying on average intensity of revenue-based sector emissions and historical 2019 emissions data to estimate greenhouse gas emissions.



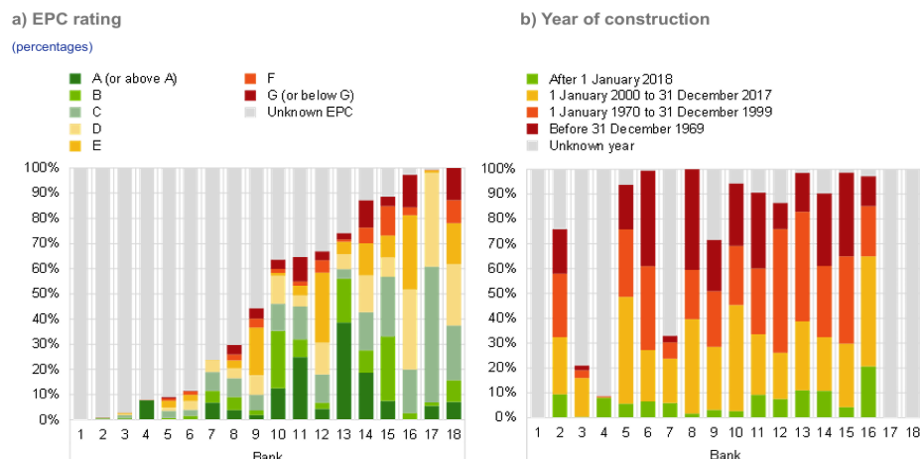
Source: Bank Submissions, Title: Main methodologies used by selected banks for in-house proxies found on pg.28 of the [ECB report](#).

## EPC Data

EPC data remains scarce, 1 in 4 banks holds none at all, and estimations are often skewed towards better ratings, understating risk. Good practices include:

- i. Collecting real EPC data at loan origination, via public registers and through valuers.
- ii. Where estimation is necessary, applying machine learning algorithms on representative samples, with back-testing, clear documentation and senior governance oversight.

The chart on the right illustrates the breakdown of CRE buildings across selected banks by EPC rating and year of construction, highlighting differences in building energy efficiency profiles and the age distribution of underlying real estate exposures.



Source: Targeted CRE review. Notes: Based on a sample of 18 significant institutions. Each institution is assigned the same number in both panels, Reference date: 30 June 2021. Title: Breakdown of CRE buildings by EPC rating and year of construction found on pg.34 of the [ECB report](#).

# Integration of Climate and Nature-related Risks into Stress Test Credit Risk Models

Consistent with [Expectations 1,4 and 7 of the Guide](#), the ECB identifies good practices across six pillars — climate risk transmission, transition risk, physical risk, nature-related risks, long-term modelling and risk mitigation — reflecting material progress since the [2022 Climate Risk Stress Test](#). The primary objective is not statistical precision but capturing the magnitude of climate risks and clients' preparedness, with advanced institutions applying climate-adjusted financial metrics, granular geolocation and sector-specific approaches to stress PD, LGD and collateral valuations.

## Climate-related risk transmission to credit risk parameters

- The ECB identifies that climate risk quantification combines carbon price, GHG emission intensities, emission pathways and energy mix variables under a given scenario.
- Good practices incorporate both direct channels (corporate costs, collateral values) and indirect channels (GVA, GDP shocks) to fully capture climate risk transmission.

## Transition Risk Modelling

- The ECB observes increasing sophistication in LGD methodologies, from ECB-provided real estate price projections and LTV-to-LGD mapping as a baseline, to advanced dedicated models reassessing recovery rates preserving the link with historically observed internal rates.
- Good practices include EPC-linked collateral revaluation, carbon tax impacts on property cash flows, emission intensity parameters for corporate collateral and a conditional PD-LGD relationship to ensure consistency.

## Physical Risk Modelling Approaches

- Compared with the 2022 report, the ECB places greater emphasis on physical risk modelling with advanced institutions developing hazard-specific approaches integrating acute and chronic physical risks into PD and LGD frameworks.
- Key hazards include flood, wildfire, drought and heatwave; collateral revaluation via LTV-to-LGD mapping remains the primary LGD channel, while corporate PDs are stressed through damaged financials and rating model adjustments.

## Nature-related Risks

- The report introduces emerging approaches for nature-related risk stress testing, including exploratory nature-related scenarios and environmental degradation pathways within stress-testing exercises.
- Key transmission channels modelled include physical risk drivers and transition risk drivers. However, the absence of reference scenarios and consensus methodologies remains the primary constraint on progress.

## Long-term Modelling

- Increasing use of long-term climate modelling approaches, integrating dynamic balance sheets, counterparty transition plans and climate risk scores to differentiate exposure reallocation strategies by sector, scenario and ESG vulnerability.
- Good practices combine top-down macroeconomic variables (GVA, carbon price, GDP) with bottom-up portfolio inputs, running static and dynamic balance sheet projections in sequence to inform strategic and credit allocation decisions

## Modelling risk mitigation

- Advanced banks apply loan-level insurance coverage as a mitigant to flood risk real estate shocks, reducing stressed LTV and LGD, though most institutions do not yet model insurance or national compensation schemes due to data scarcity.
- Good practices estimate national compensation schemes (NCSs) from past acute physical risk events and apply these as haircuts to real estate price shocks, while use of simple average coverage ratios is explicitly flagged as poor practice.

# Conclusion

Significant progress has been observed since the 2022 Climate Risk Stress Test, the ECB's conclusions highlight both the material progress made by significant institutions in integrating climate and nature-related risks into their stress-testing frameworks, and the further work required to ensure these frameworks are fully comprehensive and modelling approaches sufficiently robust. Supervisory focus is also increasing ahead of the upcoming EBA Guidelines applicable from 1 January 2027.

## Progress since the 2022 ECB Climate Risk Stress Test

- ✓ Significant progress has been observed in the **sophistication and coverage of climate stress-testing practices** since the 2022 ECB Climate Risk Stress Test.
- ✓ While the 2022 exercise primarily focused on transition risk transmission to PDs, **institutions increasingly developed methodologies incorporating LGD impacts and physical risk transmission channels.**
- ✓ Climate risk modelling frameworks still capture only a subset of material risk drivers, particularly for physical and nature-related risks.

## Remaining challenges in Physical and Nature-related Risk integration

01	02	03	04
<p><b>Physical risk integration</b> remains incomplete across institutions, with observed practices often <b>limited to specific portfolios, regions and risk categories</b></p>	<p><b>Nature-related risk stress-testing methodologies remain at an early stage of development.</b></p>	<p>Challenges persist regarding <b>data availability, reference scenarios and quantification methodologies</b> for nature-related risks.</p>	<p>Challenges also remain in capturing <b>non-linear impacts and heightened uncertainty</b> associated with climate and nature-related risks.</p>

## Climate Stress-testing frameworks and future supervisory focus areas

**Importance of comprehensive Climate Stress-testing frameworks**

- Strengthening the comprehensiveness of climate and nature-related stress-testing frameworks remains essential to ensure material risks are adequately captured.
- More robust frameworks support more accurate climate risk quantification and help reduce risks of mispricing lending decisions, misallocating resources and overvaluing collateral.
- Climate and nature-related risks are expected to be fully integrated within prudential risk categories, capital planning and recovery planning processes.

**Future Supervisory Focus Areas**

- Supervisory climate stress testing will remain a key tool for assessing institutions' vulnerability and resilience to climate-related shocks.
- Transition and physical risks are expected to be incorporated into EU-wide regulatory stress tests, in line with the Joint Guidelines on ESG stress testing recently published by European Supervisory Authorities and applicable from 1 January 2027.
- Dissemination of observed good practices is also intended to support institutions in enhancing their analytical and modelling capabilities.

# How can Grant Thornton support you?

We support institutions in strengthening climate and nature-related risk stress-testing capabilities in line with evolving supervisory expectations. Our services help institutions enhance climate risk governance, scenario analysis, data infrastructures, modelling methodologies and integration of climate-related risks into credit risk frameworks, stress-testing exercises and strategic decision-making processes.

## Climate Risk Governance & Strategy

Embed climate and nature-related risk considerations into governance structures, strategic planning, risk appetite frameworks and supervisory reporting processes.



Climate Risk Governance & Strategy



Materiality Assessment and Risk Identification

## Materiality Assessment and Risk Identification

Support climate and nature-related materiality assessments, sectoral vulnerability analysis, concentration assessments and identification of portfolios exposed to transition and physical risks.



Control Frameworks and Assurance

## Control Frameworks and Assurance

Strengthen internal controls, governance processes and independent validation frameworks supporting climate and nature-related stress testing, modelling methodologies and supervisory compliance.



Data Architecture and Methodology Development

## Data Architecture and Methodology Development

Enhance climate-related data infrastructures, including GHG emissions, geolocation and EPC data, while strengthening proxy methodologies, validation controls and risk measurement frameworks.



Risk Plan Management and Monitoring

## Risk Plan Management and Monitoring

Support implementation and monitoring of climate-related action plans, portfolio steering activities, risk indicators and long-term transition monitoring frameworks.



Scenario Analysis, Stress Testing, and Model Integration

## Scenario Analysis, Stress Testing, and Model Integration

Develop climate and nature-related stress-testing frameworks aligned with ECB good practices, including transition and physical risk scenario design, integration of climate risk transmission channels and incorporation into PD, LGD and collateral valuation methodologies.

# Contact

Our team specialises in supporting institutions in strengthening climate and nature-related risk management and stress-testing capabilities aligned with evolving ECB supervisory expectations. From governance integration and materiality assessments to climate-related data infrastructures, scenario analysis, transition and physical risk modelling, stress testing and integration into credit risk frameworks, our tailored services support the full climate risk management lifecycle. Contact us today for tailored support.

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