



EUROPEAN CENTRAL BANK

BANKING SUPERVISION

# 2022 ECB Climate Risk Stress Test

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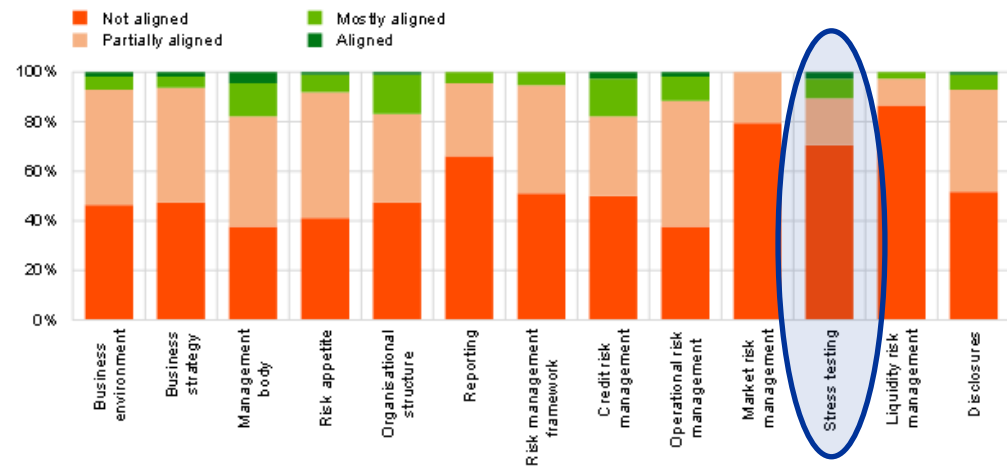


# Banks' practices are not yet aligned with expectations

- **No SSM institution** is close to fully aligning practices to the expectations supervisory
- Most institutions consider C&E risks to have a **material impact** on their risk profile in 3 to 5 years
- Steps are taken to adapt policies and procedures, few institutions have practices with a **discernible impact** on their strategy and risk profile
- Less than half has taken first steps to **adjust their strategy**
- Most institutions have a **blind spot for physical and other environmental risk drivers**

## Institutions' alignment with the 13 supervisory expectations set out in the ECB's Guide

(percentages)



Source: ECB's supervisory assessment.

# Objectives of the 2022 SSM climate risk stress test exercise

- **Joint learning exercise** with pioneering characteristics.
  - Enhance both banks' and supervisors' capacity in assessing climate risk.
  - **Create awareness of climate risk** and **identify banks' vulnerabilities**.
  - Provide guidance to banks and **enhance data availability**.
  - Understand **banks' climate risk stress testing frameworks** and their **level of preparedness**.
  - Identify **best practices** and limitations banks are facing.
- **Disclosure limited to aggregate results** with main conclusions from analysis.
- **SREP integration focussing on qualitative** aspects with no direct quantitative impact; i.e., it is not a capital risk exercise.

# Identification of climate risk vulnerabilities and the impact on SSM banks through climate stress testing



## Scope & methodology

- Qualitative assessment of **climate risk stress test framework**
- Stock-take on (i) **business model** in light of **transition risk** and (ii) **financed GHG emissions**<sup>1</sup>
- **Bottom-up** stress test loss **projections** (subset of sample)



## Climate risk scenarios

**Transition risks** based on NGFS<sup>2</sup> scenarios:

- Identify short-term tail risks (3 years)
- Analyse long-term transition paths (30 years)

**Physical risks** for Europe:

- Flood risk (1 year)
- Heat & drought risk (1 year)



## Quality assurance

- Quality assurance based on **STAR infrastructure**<sup>3</sup>
- **Quality assurance cycles**
- Centralised calculations and **challenger views**
- **Output report** generation



## Output report

- **Climate risk stress test capabilities**
- **Peer benchmark** of profitability-vulnerability and GHG emissions
- Impact from **credit risk** and **market risk**
- Assessment of **operational and reputational risks**

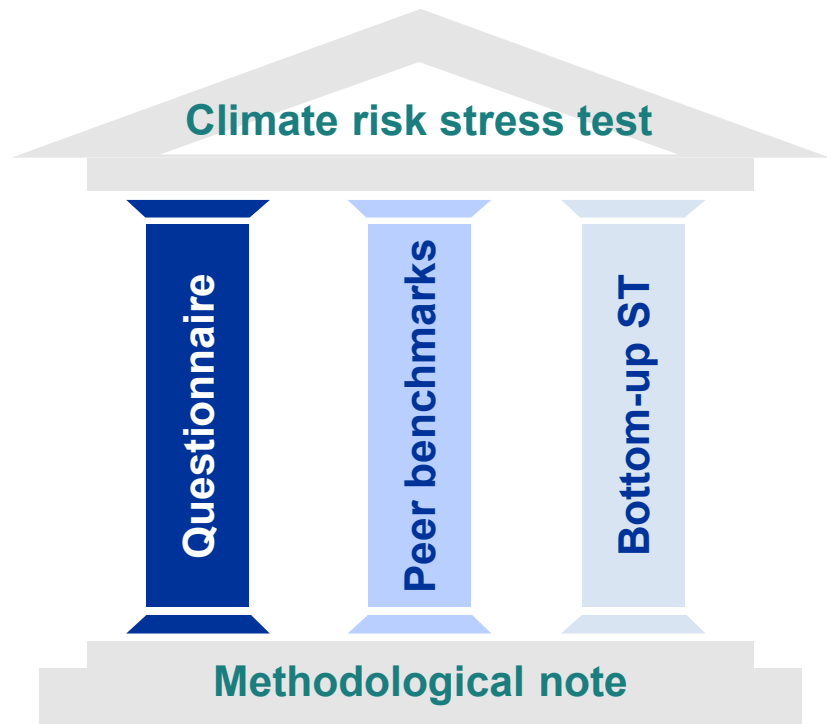
## SREP integration

<sup>1</sup> Greenhouse Gas emissions.

<sup>2</sup> Network for Greening the Financial System.

<sup>3</sup> ECB proprietary infrastructure.

# Climate risk stress test covers three modules to test the banks' capabilities to assess climate risk



- 1 Questionnaire:** Uniform and standardised assessment of banks' climate risk stress testing framework.
- 2 Peer benchmarks:** Uniform methodology for benchmarking banks across a common set of climate risk metrics.
- 3 Bottom-up stress test:** Uniform methodology for banks' bottom-up stress test projections.

**Proportionality applied: all banks submit starting points but only a **subset** of banks submit bottom-up projections**

# How do supervisors approach data collection and address the issue of data limitations in the exercises?

- **Gap analysis:** reviewed regular supervisory reporting templates (ITS)
  - 5% of +300 ITS templates were assessed to be of relevance for climate ST
  - ITS templates somewhat useful for credit risk, but much less so for market risk and operational risk
  - Can use credit register data for corporate exposures to quality assure bank submissions
- **Granular ST data collection** necessary: ECB 2022 CST to a large extent a data collection exercise
- **Early consultation** with the industry (Spring 2021) to help assess feasibility and data availability (both in banks' internal data systems and from private data vendors)
- Final requirements aim to **strike a balance** between data needs to conduct a meaningful exercise, banks' level of preparedness (proportionality) and ambition to nudge banks to undertake the necessary investment

# Climate risk exposure broken down by industry sector, EPCs<sup>1</sup> and within country differences

## Industry sector

Corporate exposures to be broken down by industrial sectors (at NACE 2-digit level):

- Focus on the **22 sectors within NACE codes A-H & L**.
- **Banks are strongly encouraged to apply counterparty level analysis**, but not mandatory.
- Banks to break down corporate exposures by **Scope 1, Scope 2 and Scope 3** GHG emissions

## EPCs<sup>1</sup>

Use of Energy Performance Certificates (EPCs) for residential and commercial real estate exposures:

- EPCs are **mandatory in the EU** for real estate transactions.
- Heterogeneity exists within and across countries, but **key indicator of relative energy efficiency and transition risk**.
- ECB is **aware of data gaps and provides methodological guidance** to support banks.

## Within country difference

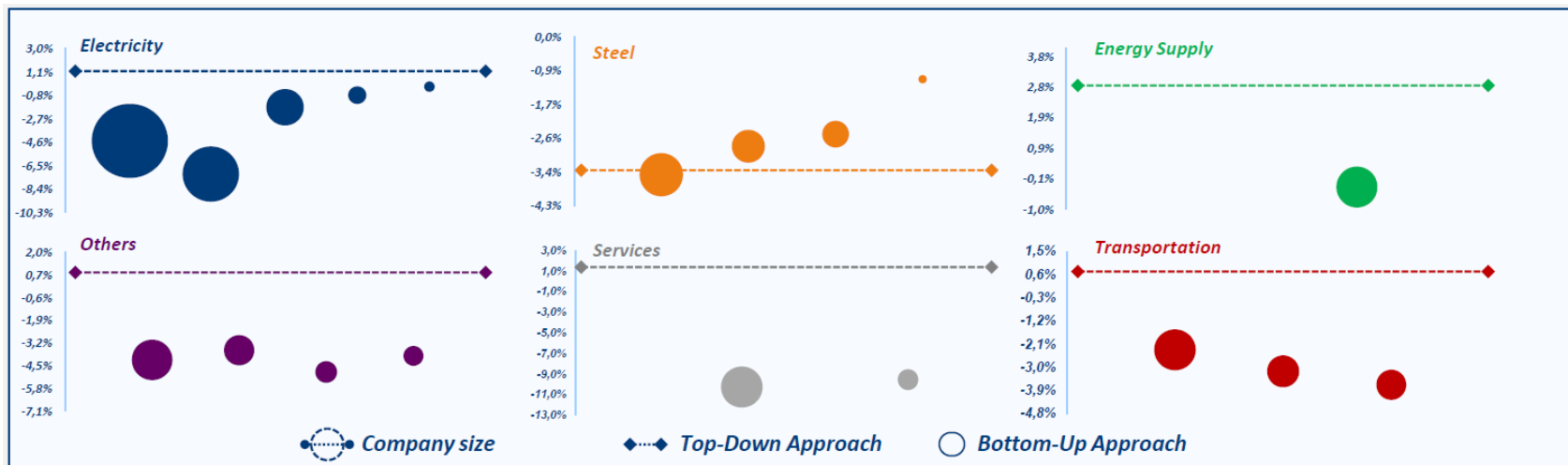
Within country disaggregation to assess physical risk heterogeneity:

- **Heterogeneity in flood risk at NUTS 3 level**.
- Flood risk: Focus on **loans secured by real estate**, collateral destruction channel.
- Methodology provides guidance on how **insurance coverage** needs to be integrated.

<sup>1</sup> Energy Performance Certificates

# What are the benefits of gathering data at granular vs sectoral level?

- Banks are asked to report exposures at sectoral/portfolio level but strongly encouraged to use counterparty level data for modelling and data aggregation purposes
- As relying on sector-level models to estimate stressed PDs may lead to less precise and potentially biased results



Source: CRIF, slides for Credit Risk Club workshop, 13 January 2022, Milano

Note: “Top-down” refers to industry/sector level model, while “bottom-up” refers to counterparty level model.

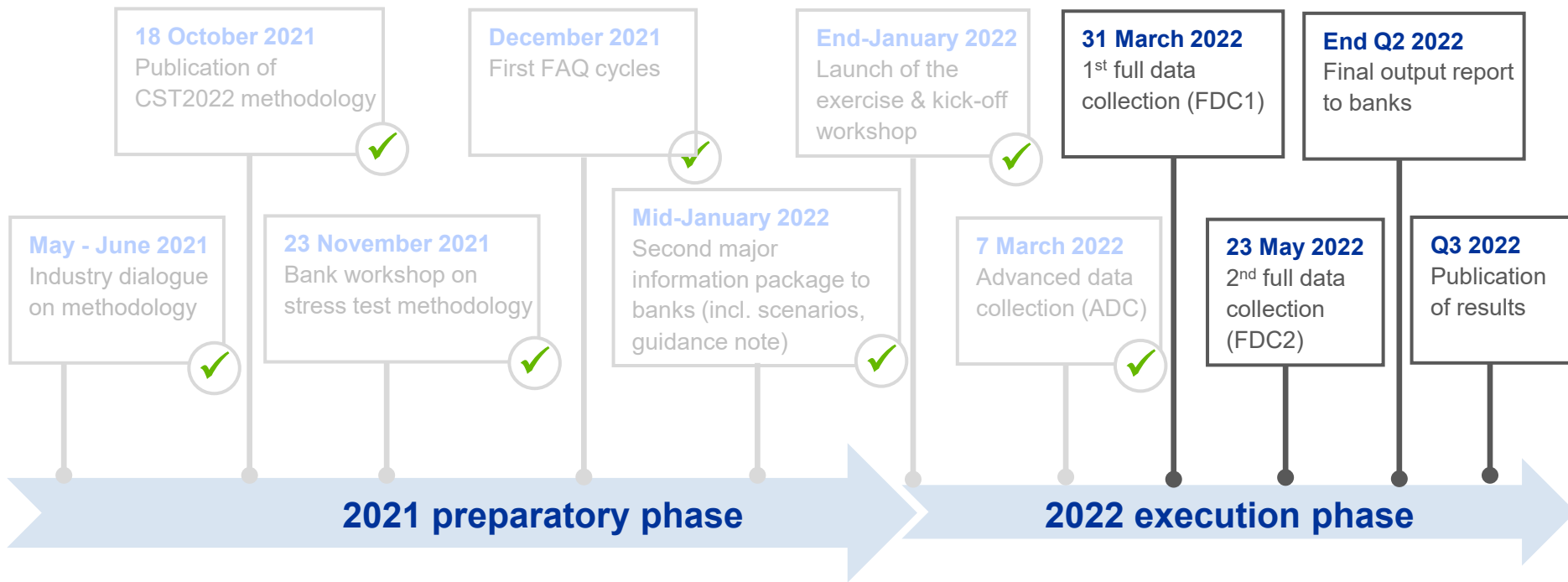


# Common methodology to address both physical and transition risk; different time horizons

x Details in Annex

	Exposures	Scenario	Projections <sup>1</sup>	Horizon	Credit risk	Market risk	Operational risk
Transition risk	Global	1 Short term stress	Baseline	3 years (2022-2024)	Corporate loans (incl. SME, CRE) + mortgages	Bonds + stocks issued by NFCs <sup>2</sup> (incl. accounting and economic hedges)	5  Operational and reputational risks to be assessed via a qualitative questionnaire
		2 Long term paths	Stress				
			Orderly	30 years (2030, 2040, 2050)	Corporate loans (incl. SME, CRE) + mortgages		
			Disorderly				
Physical risk	EU countries	3 Drought & heat risk	Baseline	1 year (2022)	Corporate loans (incl. SME)	1. All projections with the exception of the long-term paths will be based on a static balance sheet. 2. The parent company needs to be an NFC, e.g. bonds issued by car financing company X are in scope.	
		4 Flood risk	Stress				
			Baseline	1 year (2022)	Mortgages + CRE loans		
			Stress				

# Timeline



# Annex

# Internal climate risk stress test assessment in Module 1 forms the basis for Modules 2 and 3

- Module 1 assesses banks' **internal climate risk stress test framework** in line with **expectation 11 set out in ECB's guide on climate-related and environmental risks** from November 2020, i.e.:
  - “Institutions with material climate-related and environmental risks are expected to evaluate the **appropriateness of their stress testing** with a view to incorporating them into their baseline and adverse scenarios.”
- Module 1 to **provide supervisors with new insights** into
  - **Individual bank's** internal climate risk stress test capabilities; as well as
  - **Industry-wide best practices** in terms of internal climate risk stress test frameworks.
- The outcome of module 1 will also **inform the assessment and evaluation of Module 2 and Module 3**, e.g. provide insights into data quality / availability.

# Module 1: Eleven sections guide the assessment of banks climate stress test capabilities (1/2)

## 1. General climate risk stress test

General questions regarding the existence and use of climate risk stress testing within the institution.

## 2. Climate risk stress test governance and risk appetite

Business areas involved in the development, execution, and validation of the climate risk stress test framework.

## 3. Integration into institution's business strategy

Use test of the climate stress test results by the institution.

## 4. Climate stress test methodology

Methodological choices, e.g.: transmission channels, portfolios, static vs. dynamic, etc.

## 5. Stress test scenarios

Scenario choices, e.g.: sources of scenarios, horizons, physical risk aspects, transition risk aspects, etc.

# Module 1: Eleven sections guide the assessment of banks climate stress test capabilities (2/2)

## 6. Data

Availability and sources of the data in the internal climate risk stress test frameworks of the banks.

## 7. ICAAP

Inclusion of climate risk related stress test results into the ICAAP.

## 8. Future plans

Steps to enhance the climate risk stress test framework; interaction with other priorities.

## 9. Internal Audit

Internal Audit's involvement in the internal climate risk stress test framework.

## 10. Parent Company

Applies to EU subsidiaries of non-EU institutions and explores their climate risk stress test framework.

## 11. Bottom-up Projections

Methodological choices and challenges to build bottom-up calculations (only for a subset of the banks).

# Module 2 provides stock-take on sustainability of banks' income and financed GHG emissions (1/2)

- Module 2 consists of **two climate metrics** that provide insights into the **exposure of banks' income to transition risk** and their **exposure to carbon-intensive industries**.
- Design of the metrics to shed light on the **analytical and data capabilities** of the banks regarding **climate risk**.
- All reporting should be based on **NACE<sup>1</sup> rev. 2 digit 2 level** sectoral information.<sup>2</sup>
- Banks should map their **corporate counterparty** to one single sector **based on its principle activity**, i.e. the activity that generates the highest share of the counterparty's revenue.
- Banks are further required to **provide information** in an accompanying explanatory note **on climate-related actions the bank has taken** in the past to **finance the green transition**.

1) Statistical classification of Economic activities in the EU.

2) The complete list of sectors is provided in the accompanying templates.

# Module 2 provides stock-take on sustainability of banks' income and financed GHG emissions (2/2)

## Metric 1: Income of GHG intensive industries

- Assessment of **business model sustainability** based on interest income, fee and commission income by non-financial corporates' (NFCs) industry.
- Reported information used to measure the **bank's reliance on income stemming from GHG intensive industries.**

## Metric 2: Financed GHG emissions

- Assessment of **banks' exposure to carbon-intensive industries** based on a weighted average carbon intensity metric.
- Banks to provide **Scope 1, 2 and 3 emission data<sup>1</sup>** for their largest non-SME corporate counterparties per NACE sector.

1) Scope 1: direct emissions from activities under control of the company; Scope 2: indirect emissions from purchase and use of electricity, steam, heating and cooling; Scope 3: other indirect emissions coming from sources not under control of company.



# 1 Short term transition risks focuses on banks' current vulnerability to a disorderly transition

## Objective

- Assess the **vulnerability of the banks' current balance sheets** to a disorderly transition.

## Credit risk

- Banks' **mortgage and corporate & SME exposures** in scope; Sectors to which exposures comprise less than 0.05% of total assets are not in scope.
- Largest counterparty countries to be included to cover at least 80% of global exposures, but number of counterparty countries capped to five.
- **Projections for 2022-2024** following closely EBA ST methodology, but **no Risk Exposure Amount projections**.
- Disaggregation for (i) **industrial sectors** (NACE 2 digit) and (ii) **EPC labels**.

## Market risk

- In scope are banks' **bond and equity positions including directly connected derivatives** in the HFT accounting framework.
- Banks calculate **changes in the fair value on impact** based on sudden shocks.
- **Distinguish between accounting and economic hedging**

## 2 Long-term view focuses on banks' strategic choices and potential losses under different paths

### Objectives

- Assess **banks' long-term transition risks** and obtain insights in **banks' strategic choices** when for three different long-term transition risk scenarios.
- Narratives based on **NGFS transition risk scenarios**.

### Only credit risk in scope

- Banks **project credit losses on mortgage and corporate & SME exposures** with **dynamic** balance sheet.
- Projections for **2030, 2040 and 2050**.
- **Simpler set of credit risk parameters** (PD and LGD, no stage transitions).

### Dynamic balance sheet

- Banks have **flexibility to change their balance sheet but** need to indicate changes due to (i) general balance sheet growth or (ii) reallocation between sectors / EPC label categories.
- Banks need to **provide information on their assumptions** in the explanatory note, assumptions need to be consistent with public commitments banks made.

### 3 Drought & heat focuses on banks' credit risk vulnerabilities to corporate counterparties

#### Objective

- Assess banks' short-term vulnerabilities to a **severe heat wave**.
- Production is affected **heterogeneously across countries and industries**.
- For simplicity and ensuring a level playing field, **the heat wave is assumed to take place on 1 January 2022**.

#### Corporate & SME exposure in scope

- Corporate & SME exposures **disaggregated by industries at the NACE 2 digit level**.
- Sectors to which exposures comprise less than 0.05% of total assets are not in scope.
- Largest counterparty countries to be included to **cover at least 80% of EU exposures**, but number of counterparty countries capped to five.

#### Bank projections

- The **scope** of bank projections are restricted to the **short term** to focus on the direct effects of extreme weather events and contain the regulatory burden.
- Banks **project credit risk parameters for 2022**, long-term parameters assume unchanged effects from 2023 onwards.
- **No second-round effects should be taken into account**, only the direct impact.

## 4 Flood risk projections focus on within country heterogeneity of collateral vulnerabilities

### Objective

- Assess banks' short-term vulnerabilities to **flood risk**.
- Impact of the flood differs within countries using **disaggregation at NUTS 3 level**.
- Similar to the heat wave, for simplicity and ensuring a level playing field **the flood is assumed to take place on 1 January 2022** and **the ECB provides a flood risk map**.

### Mortgage and CRE<sup>1</sup> exposure in scope

- Largest counterparty countries to be included to **cover at least 80% of EU exposures**, but number of counterparty countries capped to five.
- **Banks need to split their exposures by flood risk region within each country.**

### Bank projections

- The **scope** of bank projections are restricted to the **short term** to focus on the direct effects of extreme weather events and contain the regulatory burden.
- Banks **project credit risk parameters for 2022**, long-term parameters assume unchanged effects from 2023 onwards.
- **No second-round effects should be taken into account**, only the direct impact.