ECB climate stress tests - another step on a long journey

The European Central Bank's 2022 climate risk stress test leaves no doubt: banks will be sensitive to loan losses from climate risks, and will benefit from an orderly green transition. The sector's data collection challenges remain significant, however

Orderly green transition would lead to lower loan losses for banks

On Friday 8 July, the ECB published its climate stress test results as part of its climate roadmap. The 2022 climate stress test was primarily conducted as a learning exercise, aiming to enhance the ability of both the European banking sector and the central bank to assess climate risks. As such, the stress test results will not have any direct capital implications, even though the ECB indicates that it will consider these supervisory findings in a qualitative and indirect way in the annual SREP assessment.

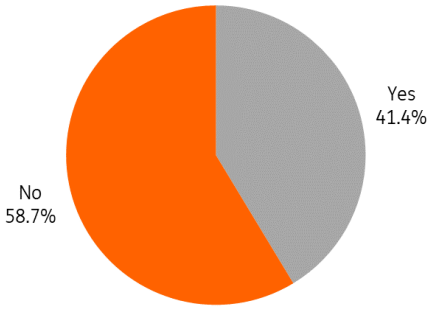
While the number of banks with a climate stress testing framework has increased, the exercise still does not capture a wider range of climate change risks across complete balance sheets, instead concentrating on a smaller part of the books. The main bottleneck is

access to good quality data.To obtain better quality data, banks should invest in data collection, and rely more on actual data instead of proxies.

When it comes to concrete findings of distinct banking sector exposure to the green transition and physical climate risks, the latest stress test results were probably somewhat less insightful than the economy-wide stress test results published by the ECB in September 2021. What remains clear though, is that banks do stand to benefit from an orderly green transition, which will lead to lower loan losses for banks than a disorderly or inactive transition. The 2022 climate risk stress test confirms that carbon-intensive sectors, such as manufacturers of refined petroleum products, mining and minerals are indeed most exposed to transition risks. The mining, agriculture and construction sectors also appear most exposed to physical climate risks arising from heat and drought, particularly in geographical areas that are more vulnerable to extreme temperatures.

While many banks are planning to finance the green transition, the targets are not yet concrete. More banks indicate that they could reduce their lending to the most polluting sectors than to other sectors, which we believe could be driven by regulatory or perhaps climate change-related reputational considerations.

Share of banks currently including climate risk in their stress test frameworks



Source: ECB (2022 climate risk stress test – Findings on bank's climate risk stress-testing capabilities), ING

Usage of climate risk stress testing is increasing, but slowly

An important part of the whole climate risk stress testing exercise was for the ECB to better understand banks' progress on integrating climate risks into their internal stress-testing frameworks. To form an overview of banks' climate risk stress-testing capabilities, the ECB asked banks for detailed information on their climate stress testing framework, governance and modelling practices. This allowed the ECB to use a scoring system to compare banks to each other in terms of their preparedness.

Some 41% of banks reported that they had a climate risk stress-testing framework in place as of end-2021. Although still relatively limited, this is higher than what has been published previously. For example, based on the ECB's report on the state of climate risk management in the banking

sector that was published in November 2021, 25% of banks had performed a climate risk-related stress test and 13% had integrated climate risks into their regular stress-testing frameworks. So some improvement can be seen.

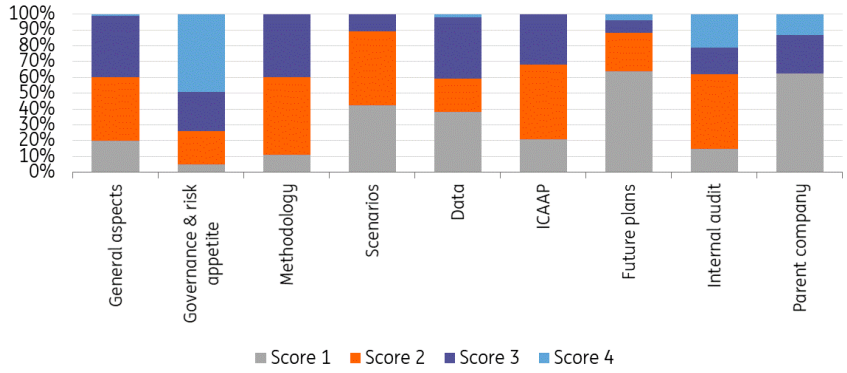
However, banks do not, at least yet, utilise their climate stress-testing capabilities to a larger degree in their business decisions. Only 19% of banks with a climate stress-testing framework in place, actually used it to inform their loan granting process. Furthermore, around 40% of banks with a framework did not consider the test outcomes in their business strategy. Also, the testing was not extended to the whole balance sheet. Meanwhile, 37% included only one or two climate risk transmission channels such as credit or counterparty risks or market risks. And 35% captured only 1-3 portfolios such as corporate loans, household loans or SME loans. Climate stress testing involved mainly physical risks (71%) and transition risks (81%). Liability or reputational risks were less frequently captured (24%).

While the climate risk stress-testing frameworks mostly had a validation process in place (93%), 75% of them had the same business process responsible both for the development and validation of the framework. Around 60% of those with a framework did not disclose any results in their Pillar 3 reporting.

Three-quarters of banks with a framework did include climate-related and environmental events in their operational risk stress testing or scenario analysis. For assessing reputational risks, less than 40% of banks indicated that they included climate-related and environmental events.

The number of banks with a climate risk stress testing framework in place is likely to increase only gradually in the coming years. Only 35-39% of banks, that did not yet have a framework in place, expect to be able to implement transition or physical risks in their frameworks within a year. Over 50% of banks need at least one to three years to incorporate physical and or transition risks into their stress-testing framework. Almost all mention the need for data to enhance their climate risk stress testing framework.

Banks' preparedness across key components of climate risk stress-testing frameworks (Module 1, per block)



Source: ECB (2022 climate risk stress test – Findings on bank's climate risk stress-testing capabilities), ING

Data availability remains a key issue for climate risk stress testing

One of the main challenges with climate change stress testing is data availability. Some 23% of banks with no climate stress-testing framework in place indicated that data was a challenge. Also, banks indicate that data, for example on clients' climate strategies and targets or the exact location of clients' premises, was not available to the relevant business areas of the bank.

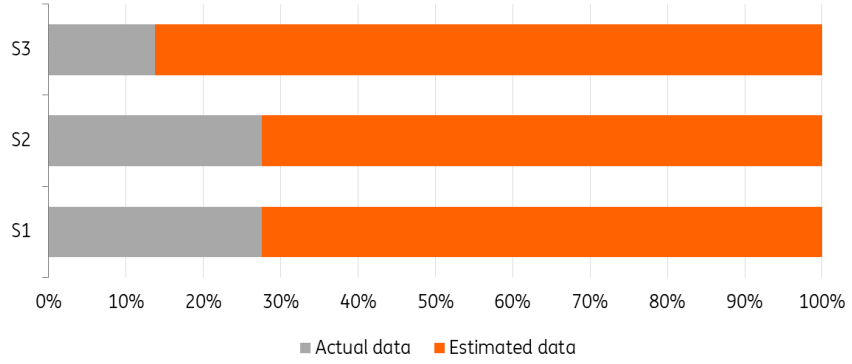
The ECB notes that one of the objectives of the whole exercise was to make banks enhance their data infrastructure and collection of the relevant data breakdown of exposure and income items. In this round, banks were allowed to use proxies for Scope 1, 2 and 3 emissions and EPC data.

Many companies do not disclose emissions data currently, and banks have made widespread use of the option to use proxies for collecting emission data. For example, around 70% of the Scope 1 and 2 emissions data was based on a proxy rather than on the actual data, while for Scope 3 emissions, over 80% of the data was based on a proxy instead of the actual thing.

The usage of various techniques for collecting the emissions data results in a high dispersion of the data reported even for the same counterparties. Also, obtaining the proper EPC labels was challenging as 65% of banks had to utilise some type of proxy for obtaining the labels, such as the construction year or energy costs of the building. Furthermore, banks were unable to allocate 17% of the mortgages into an EPC label category.

The ECB urges banks to invest more in data collection, to step up their customer engagement and become less dependent on using proxies, to allow for proper counterparty assessments that can be used for climate stress testing purposes.

Relative use of actual counterparty data vs proxies for reporting Scope 1, 2 and 3 emission data (all sectors)



Source: ECB (2022 climate risk stress test – Findings on bank's climate risk stress-testing capabilities), ING

Methodology

The 2022 climate stress test was performed as a **constrained bottom-up stress test**, for which the participating banks provided their own data submissions and stress test projections, subject to a common methodology and a common set of scenarios. The methodology was based on three distinct modules:

- **Module 1:** A qualitative questionnaire aiming at assessing the internal climate risk stress-testing frameworks of banks;
- **Module 2:** Stock take on two climate risk metrics: 1. The sensitivity of banks' income to transition risk, and 2. Bank exposures to carbon emission-intensive industries (22 high climate impact sectors representing 90% of GHG Scope 1 emissions in Europe);
- **Model 3:** Bottom-up stress test, where banks provided projections for different scenarios and risk areas, covering both physical and transition risks.
    - Physical risk: 1. Drought and heat scenario; 2. Flood risk scenario
    - Transition risk: 1. Three different long-term (30 years) climate policy paths (dynamic balance sheet adjustments): a. an orderly transition, b. a delayed disorderly transition and c. a 'hot house world' with unchanged policies. 2. Short-term three-year horizon (static balance sheet).

Modules 1 and 2 were tested across 104 significant institutions, assessed as part of the regular climate risk assessments and subject to the EBA's new Pillar 3 requirements. Only 41 significant institutions participated in module 3, applying the proportionality principle and factoring in the different levels of preparedness of the banks.

Module 3 Scenarios and risk dimensions used in the bottom-up stress test

Source: ECB, ING

Bank exposures to climate risks

The 2022 stress test was more of a learning exercise to determine whether European banks could assess their vulnerabilities to climate change rather than to offer concrete conclusions on the actual climate risks that the banks are exposed to, which would be taken into consideration by the ECB when setting additional capital requirements. Drawing such hard conclusions would have been difficult to begin with, considering the data challenges the banks are still facing when it comes to measuring climate risks. As discussed above, most banks still heavily rely on proxies to measure, for instance, the Scope 1, 2 and 3 emissions of their counterparties, with diverse outcomes. This illustrates not only the importance of further customer engagement, according to the ECB, but also the applicable boundaries when it comes to interpreting the results of the stress test.

That said, the ECB was able to draw some insightful conclusions, including from its analysis on the sensitivity of the European banking sector's income to transition risks, and its exposure to carbon-

intensive sectors under module 2:

- The banks participating in the stress test, by the end of 2021, generated more than 60% of their interest income from business with non-financial corporates belonging to the top 22 most carbon-intensive sectors. These 22 industries represent just 54% of the overall EU economy. Among these greenhouse gas-emitting sectors, the largest share of income was, however, attributable to sectors with relatively lower intensity, such as real estate activities. Global systemically-important banks were among the group of banks less reliant on income from these sectors, while small domestic retail lenders were among the most reliant.
- However, to assess banks' exposure to carbon-intensive sectors, the exposure-weighted average of the GHG emission intensity, based on Scope 1, 2 and 3 emissions was computed. The seven highest GHG emitting sectors are: 1. mining and quarrying, 2. manufacturers of coke and refined petroleum products, 3. manufacturers of non-metallic products, 4. electricity, gas, steam and air conditioning supply, 5. water transportation, 6. manufacturers of chemical products, and 7. metal products. These sectors represent 28.8% of the 22 sectors considered, but account for more than 50% of the carbon intensity of the corporate portfolios of banks. G-SIBs and universal banks then hold the largest share in the seven most carbon-intensive industries, and thus have the highest corporate portfolio carbon intensity.

Furthermore, in relation to the bottom-up stress test under module 3, the short-term disorderly scenario projects banks reported and indicative losses at €53bn, and €17bn losses under the short-term physical scenarios (drought & heat risk and flood risk). The ECB believes the reported €70bn in aggregate losses may significantly understate the actual transition risk, as the climate shock scenarios were not accompanied by an overall economic downturn, while the included exposures only account for one-third of the total. Besides, the climate risk modelling capacity of banks is still at a preliminary stage. What is clear though, is that banks do stand to benefit from an orderly green transition, as this will lead to lower loan losses for banks than a disorderly or inactive transition.

Short-term transition risk – more credit risk than market risk impact

Credit risk – more loan losses in a disorderly transition scenario

Under the short-term (three-year) disorderly transition scenario, banks show cumulated loan losses 73bp higher in comparison to the baseline scenario, with roughly half of this arising in the first year. The rise is mainly driven by the highest carbon-emitting sectors, such as refined petroleum products, mining, minerals and land transportation.

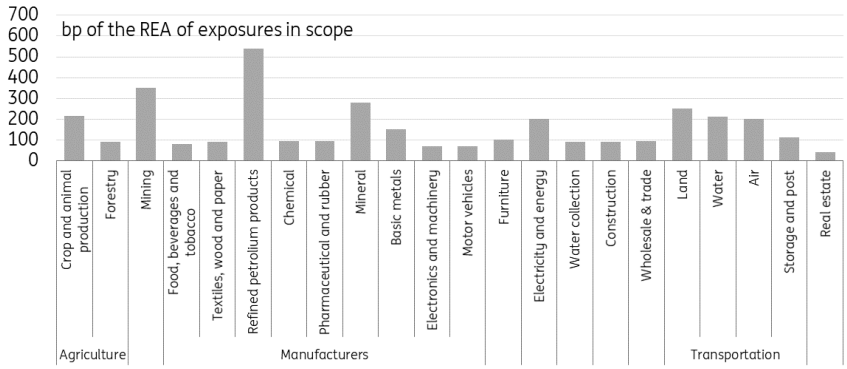
Corporate exposures not secured by real estate, or secured by real estate but not within the scope of the EPC, show higher cumulated loan losses under the disorderly transition scenario than corporate exposures secured by real estate exposures, or mortgage loans. Unsurprisingly, overall cumulative loan losses in the short-term disorderly vs baseline scenario are lowest for exposure allocations in the EPC rating class A.

Market risk – limited impact of a transition shock on the value of trading portfolios

When it comes to the market risk impact of a one-year instantaneous transition risk shock, banks

report only a very small impact on the fair value of their net positions. For equity portfolios, hedging strategies are even compensating for the losses, leading to some increase in the net fair value of the trading portfolio, whereas for corporate bonds there is a slight decline in the fair value as hedging positions appear less effective here.

Cumulative loan losses in 3yr short-term disorderly scenario vs baseline for 22 GHG-intensive sectors (bp of risk exposure amount)

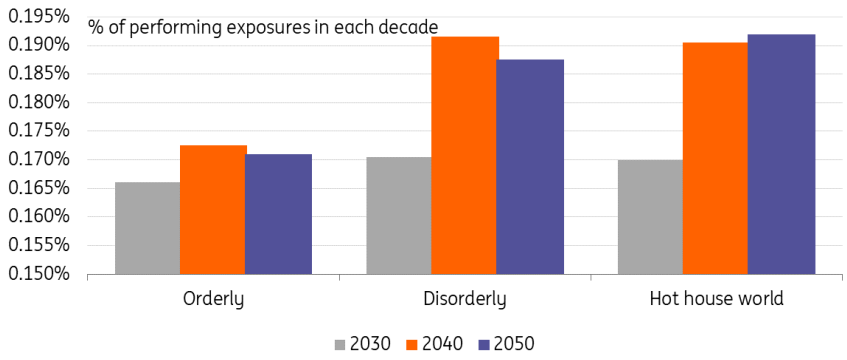


Source: ECB (2022 climate risk stress test - Banks' exposure to climate risk), ING

Long-term transition risk – fewer loan losses in the event of an orderly transition

The losses projected to occur in the next three decades are lower in the orderly green transition scenario than in the scenarios where transition policies are phased in late (disorderly transition scenario) or not at all (hot house scenario). This holds particularly for sectors with high carbon intensity, such as mining and minerals. As the long-term transition risk scenarios allow for dynamic balance sheet projections, banks do project a non-negligible reduction in their exposure to the seven most GHG-emitting sectors in the disorderly and hot house scenarios, which does have a mitigating impact on the cumulated loan losses of these two scenarios versus the orderly scenario.

Projected loan losses per decade in the long-term scenarios

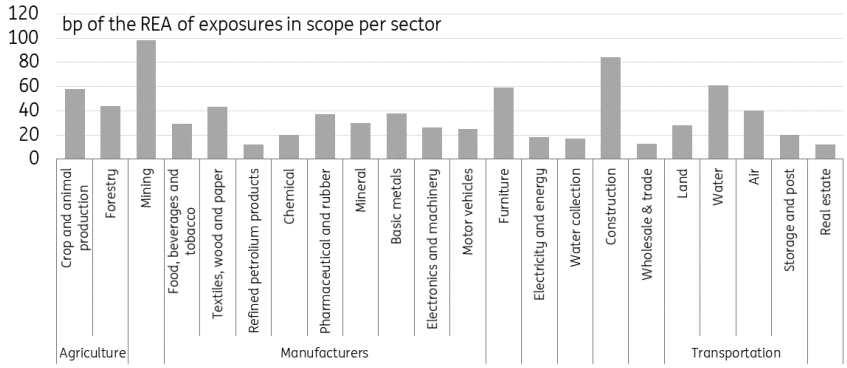


Source: ECB (2022 climate risk stress test - Banks' exposure to climate risk), ING

Physical risk – drought and heat risk impacts outdoor sectors such as mining the most

The stress test findings show that extreme temperatures under the drought and heat scenario impacts sectors and countries differently. This scenario mostly affects outdoor sectors such as agricultural activity, construction and mining, even though the increase in loan losses is primarily concentrated in geographical areas that are most vulnerable to heat and drought. While the ECB refrained from highlighting specific regions in its latest 2022 stress test report, the central bank already concluded in the economy-wide stress test report of September 2021, that Southern European jurisdictions would be primarily exposed to physical risks arising from drought and heat, while countries in the middle through Northern part of Europe are more affected by flooding risks.

Loan losses in the drought and heat vs baseline scenario (22 GHG-intensive sectors)

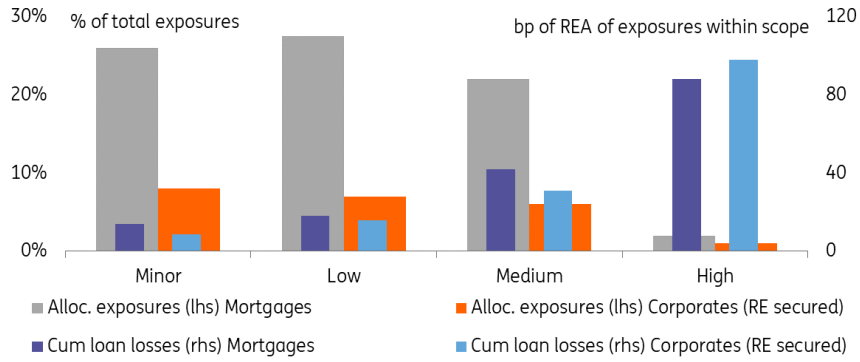


Source: ECB (2022 climate risk stress test - Banks' exposure to climate risk), ING

Physical risk – flooding increases expected real estate losses in high risk areas

The ECB finds that exposure to high-flood regions (~3%) and medium-flood regions (~28%) have a share of just 31% in the overall exposure. However, cumulative losses arising from flood risks are much higher in high-risk areas, due to the assumed severe damage experienced by the real estate collateral in these areas. High flood risks are assumed to coincide with negative shocks in real estate prices, leading to higher loan-to-value ratios and higher expected losses. The ECB clarified that those losses may be partially reduced through insurance coverage. However, less than 25% of the banks applied private insurance coverage in the projections, of which half found this covering more than 50% of the collateral loss.

Exposure and loan losses under the flood risk scenario



Source: ECB (2022 climate risk stress test - Banks' exposure to climate risk), ING

Plans for green transition still at a higher level with few concrete targets

The ECB also asked the participating banks about their plans for financing the green transition. In particular, about their plans regarding the selected greenhouse gas-intensive sectors and the portfolios in scope for the climate risk stress testing. The ECB sought to assess whether banks have significant income from high emitting sectors but may be gradually de-risking these books by supporting existing clients in their transition, or whether banks are selecting clients that are already contributing to the transition in their sector.

Banks were asked, among other things, about their criteria for selecting counterparties to support the transition, the outstanding amounts related to the provision of green finance instruments, and the key performance or risk indicators to monitor progress towards the alignment of the required transition.

Some 67% of banks provided data on their acquisition of green bonds, and 15% provided this data on a sector level. Only a third of banks provided data on the key indicators of climate change risks. The ECB notes that this points towards the fact that banks are currently undertaking action that is mostly driven by high-level objectives.

Meanwhile, 59% of the banks described actions to mitigate transition risk and support a transition that covers a significant part of their corporate sector balance sheet. Only 9% of banks had no plans. But 61% of banks note that the planned future action is not yet associated with concrete targets. Instead of concrete KPIs such as green asset ratios, overarching targets such as the net-zero banking alliance are mentioned.

Banks are more likely to decrease exposure to polluting sectors than to other sectors

Banks showed little sensitivity when it comes to elaborating on their strategies for their exposure to the most emitting sectors and counterparties in the three different scenarios (orderly, disorderly and hot house world). Instead, banks seemed to report similar strategic options for the clients in all these different scenarios.

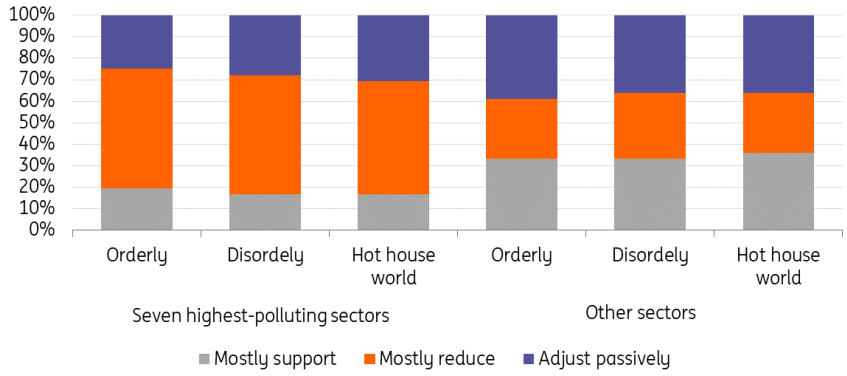
Banks seem to be more inclined to reduce their exposure to the most polluting sectors than to other sectors across the three scenarios. They are, however, more likely to passively adjust their exposure lower for other sectors than the most polluting ones. The exposure to the most polluting sectors was reported as “mostly reduce” and the less polluting sectors as “mostly support” or “adjust passively”.

Over half of the banks would mostly reduce their exposure to the seven highest polluters in all three scenarios, while some 30% would 'mostly reduce' their lending to other sectors. Around 25-30% would adjust the exposure to the most polluting sectors passively, while almost 40% of banks would adjust passively their lending to other sectors. Around 20% of banks indicate that they would support the seven highest polluting sectors across the three scenarios, while the share is closer to 35% for the other sectors.

What is also noteworthy is the very diverse paths projected for the high-polluting sectors in the 30-year transition scenarios. Some banks project that they will reduce their exposure to these high-polluting sectors, while others seem to assume continued lending to these counterparties, perhaps reflecting a willingness to support the counterparties in their transition. We note that the varying paths could also reflect the differences across the banks’ counterparties and the counterparties’ willingness and potential to transition. This type of data was, however, not provided in the report.

The differences in how banks see the development of the seven highest polluting sectors as compared to the other sectors are substantial. However, the overall differences across the three different scenarios are very limited. The ECB assesses that the small differences across the scenarios mean that banks would need to take further action to develop strategic options for the long-term transition scenarios.

Institutions' long-term strategies on whether to support/reduce exposures to counterparties in these sectors



Source: ECB (2022 climate risk stress test – Banks' plans for financing the green transition), ING

No direct impact on capital requirements for now

The climate risk stress-testing exercise will not impact bank capital requirements directly. Instead, the findings are said to feed qualitatively into the broader annual SREP assessment. In the assessment, climate risk will be assessed together with other risk drivers and it will not be assigned an individual score.

The ECB did not publish bank-level data as part of the exercise. That being said, banks have received individual feedback on their performance and the level of preparedness for climate risk stress testing. The ECB indicates that it will continue to monitor banks' progress and it expects banks to continue improving their capabilities.

The ECB notes that the climate risk stress testing exercise revealed that banks face challenges across several dimensions of climate risk stress testing. This involves gathering adequate data, but also matters related to governance, modelling and integration into ICAAP.

The ECB seeks to identify good practices by end of this year to help banks that still have more work to do in the field. Some high-level good practices are listed below.

Climate risk stress testing: good practices

1. Engage with customers to retrieve climate-relevant counterparty-level data breakdowns.
2. Integrate climate risk into the ICAAP supported by a good governance framework.
3. Proper climate risk credit modelling capabilities including, i) operate at sector level or even firm-level to account for the heterogeneity in corporate sector vulnerability to climate risks, ii) joint integration of transition and physical risks, iii) use actual data for emissions, investment in energy efficiency and transition plans at counterparty level.
4. Allocate income and exposure by sector/country and by emission intensity with Scope 1-3 emission included using counterparty level data. Model actual Scope 3 emission data.
5. Elaborate plans for long-term strategies for dealing with the green transition including concrete green transition targets and KPIs.

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